January 2001
Volume 69 No 1

Amateur Radio

Pactor Bulletin Board Service
— A Voice for the Far Outback

The 'Good Enough'
A fifty-cent Morse key that's easy to build

Clandestine Communications in WW2

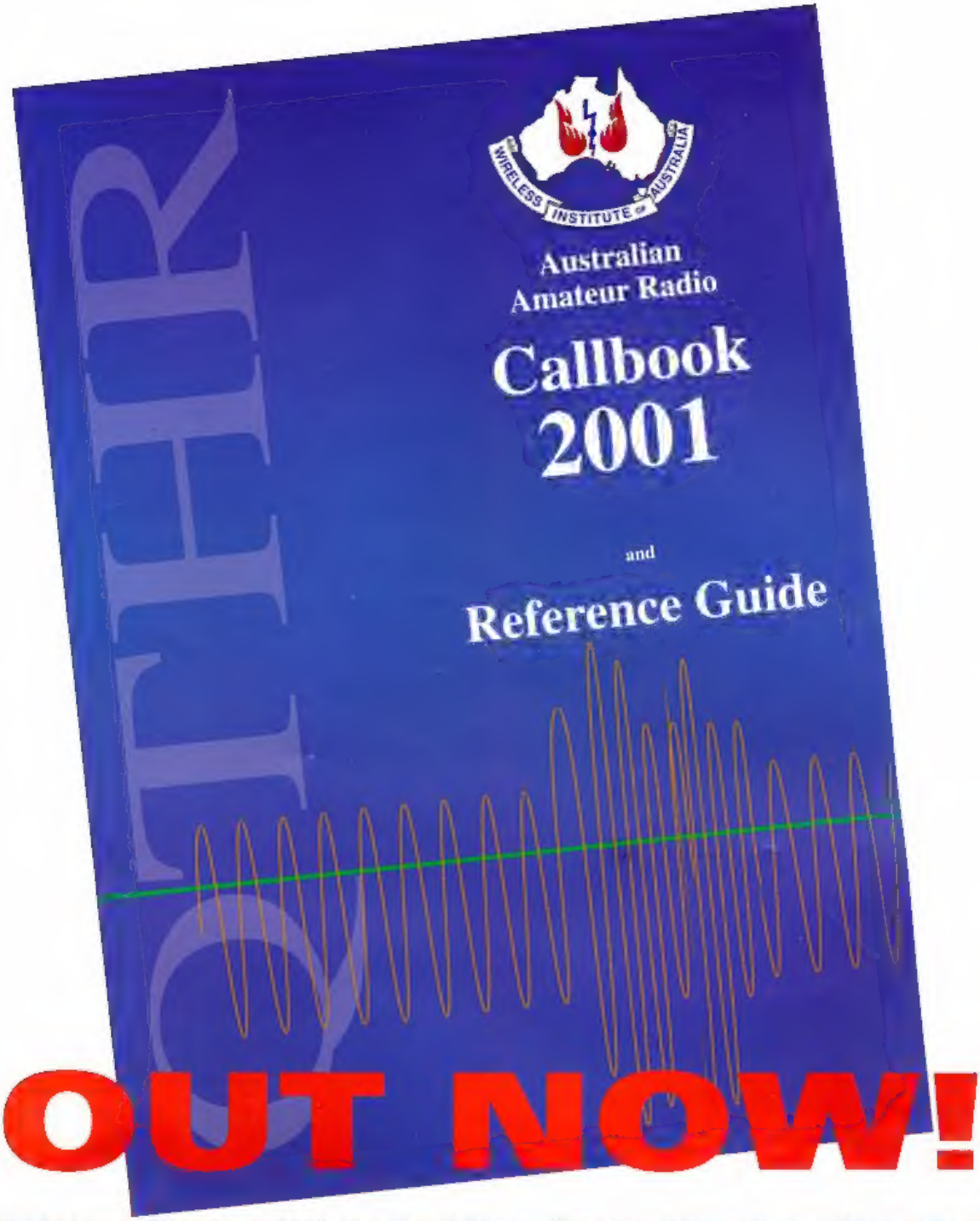
HAM LOG
A Station Log Keeping Program

Book Review:
From Wireless to the Web

Lloyd Butler VK5BR
An Active Loop Converter at VLF

Drew Diamond VK3XU
A W2PV 4-element Yagi for 6 metres

Gil Sones VK3AUI
Technical Abstracts • Simple Regen Radio • DOX Control of Yaesu FT847 • Simple Morse Practice



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Amateur Radio

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Our cover this month

VK3UM's aerial farm.
A great location and setup.

General

Technical

Columns

Contributions to Amateur Radio
Amateur Radio is a forum for WIA members' amateur radio experiments, experiences opinions and news. Manuscripts with drawings and or photos are always welcome and will be considered for publication. Articles on disc or email are especially welcome. The WIA cannot be responsible for loss or damage to any material. A pamphlet, How to write for Amateur Radio is available from the Federal Office on receipt of a stamped self-addressed envelope.

Back Issues
Back issues are available directly from the WIA Federal Office (until stocks are exhausted, at $4.00 each (including postage within Australia) to members.

Photostat copies
When back issues are no longer available, photocopies of articles are available to members at $2.50 each (plus an additional $2 for each additional issue in which the article appears).

Disclaimer
The opinions expressed in this publication do not necessarily reflect the official view of the WIA and the WIA cannot be held responsible for incorrect information published.

Amateur Radio Service

A radiocommunication service for the purpose of self-training, intercommunication and technical investigation carried out by amateurs; that is, by duly authorised persons interested in radio technique solely with a personal aim and without pecuniary interest.

Wireless Institute of Australia

The world's first and oldest
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Founded 1910

Representing
The Australian Amateur Radio Service

Member of the
International Amateur Radio Union

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Editor's Comment

Colwyn Low VK5UE

Note: The editorial is the Editor's views and not necessarily those of the WIA at any level.

Resolution or just "Amgonna"?

Happy New Year. I hope you have all had an enjoyable Christmas and New Year and are now back planning new activities, operating and/or building great new gear (If Santa did the right thing) I have still got a bit of "amgonna" in my schedule these days, but I live in hope.

New Year is a time of new dreams and aspirations. It is a time to look back and to reconsider the future. We of the WIA need to do this as much if not more than other organisations. We have a system which has not really stood the test of time but can be made to work. However it puts extreme pressure on those who are willing to accept office in the organisation at any level. It is very difficult to know where specific things get done even by those in office. The Company, State, Federal nature leaves some people with lots of responsibility and little control and some offices have almost despotic control of specific areas. The ordinary member does not see why he/she has no direct link the WIA Federal office bearers but has to go through local Divisions and Divisional Federal Councillors.

As Editor of AR for a year I have had to work hard to understand the structure and how to achieve what I think AR should be doing.

Some members are thinking about the WIA future and have put their thoughts in print. One recent example is Martin Luther VK5GN. You can get a copy from him:- Martin Luther P.O.Box 70 Willaston SA 5118, luther@mail.mdt.net.au, Fax 08 8524 3836 Tel 08 8524 3440.

Now to look at the future of AR. The Magazine is running dangerously low on material to print, be it articles, letters, local news or your latest operating adventure or your thoughts on a piece of equipment you use or have used. It will be a sad day when all that is available to print has already been published in other magazines, the Web or the Packet network.

I noted that Radio and Communication has been able to continue as Radiomag and that is a good thing. In looking through some of the results of their interest survey there seems to be great interest in antennae and building them. I noted also the December issue of R & C and AR both carried the article by Andrew Scott VK2TWO on the Spring Field Day. I feel the magazines are complementary, there is a bit of overlap but the rest of each magazine addresses a different audience.

The other future we have to look at, is who will carry the reins of the WIA into the new millennium? The Federal Convention and the election of new board members is not something that should just happen by default. We should have office bearers who feel they have the support of members and are not just there because their hand came down last !!!!!! or everyone else took one step back. There has been enough snipping at WIA office bearers by small pressure groups who do nothing to solve problems but blame others for being ineffective.

May your News Year's Resolution be to talk with your mates in the local Radio Club or at a State Divisional meeting. Then sort out who would best serve your amateur radio interests and see if you can get them to agree to stand for office. Maybe even stand yourself.

May the Force be with you.

Colwyn VK5UE

New WIA Members

The WIA bids a warm welcome to the following new members who were entered into the WIA Membership Register during the month of NOVEMBER 2000

L21182	MR R O S ADAMS	VK3JKG	MR LOUIS BELCOURT
L60415	MR K KELLER	VK3MS	MR C PAUN
VK2BRC	MR R L CLOSE	VK3PCJ	MR J O H TURNER
VK2HSW	MR R L CANNAN	VK3TGX	MR P A U STUBBS
VK2NH	MR D C THOMPSON	VK5XVS	MR S VARRO
VK3HKB	MR KEVIN BEDFORD	VK6AAK	MR F A KING
VK3HKD	MR K MCCLEARY	VK6AMY	MR G A SMITH
VK3HSV	MR P A U ASHBY	VK6KBR	MR B I ROBERTS

WIA Comment

Peter Naish
WIA Federal President.

New challenges in the new century

We have now entered the 21st. Century and can look forward to meeting the challenges of a new millennium. Most of these challenges are carried over from the last Century but will become increasingly vital to our hobby as the years progress. The WIA has a proud record of achievements on behalf of amateur radio in Australia but will need every effort to ensure that it is successful in a world where commercial interests and social pressures become the dominant forces.

In the near term we are going to see demands on the amateur radio operator to ensure that his station meets the requirements of Electro-Magnetic Radiation (EMR) standards. Fortunately the WIA has been involved in the preparation of guidelines for amateur radio stations in regard to EMR and thus we have been able to ensure that this requirement can be easily understood. It is likely that only a minority of stations will need to change their operating habits to enable them to comply. Look for forthcoming articles in "Amateur Radio" that will provide information and comfort on this subject.

We have begun to see the threat to amateur bands from commercial interests with the proposed changes to our usage of the 70 cm. band. In association with changes to spectrum access in the microwave area that have already occurred, this illustrates the need for constant vigilance to ensure that amateur radio is not dismissed as an easy target by regulators and governments in their rush to satisfy commercially inspired pressures. This is a global trend and the WIA's participation in international decisions through its membership of the International Amateur Radio Union (IARU) is a key factor in protecting our interests. The next World Radio Conference (WRC) to be held in Geneva in 2003 will be a milestone for the amateur radio service worldwide. As I have previously noted, the IARU is already working intensely to ensure that decisions made at the WRC are beneficial to amateur radio.

So, challenges are recognised and are being met. Others will appear and who knows what technological advances in the years ahead will both enhance and threaten amateur radio! I am sure amateur radio will survive as it enters its second century, but we must expect and participate in changes as and when they occur.

Finally, on behalf of the WIA may I wish you all a Happy New Year and enjoyment in amateur radio, our truly international activity.

Peter Naish
WIA Federal President.

Australian Communciations Authority

EMR Compliance Self-assessment Trial

The Australian Communications Authority (ACA) invites eligible radiocommunications licensees to take part in a trial of materials for self-assessing electromagnetic radiation (EMR) compliance

The draft materials will allow licensees of some radiocommunications transmitters to self-assess compliance of their transmitter against the limits in the *Radiocommunications (Electromagnetic Radiation—Human Exposure) Standard 1999* (as amended from time to time).

Although the standard currently applies only to transmitter installations supporting cellular mobile telecommunications services, all radiocommunications transmitters will be subject to the standard by the end of 2001.

When the regulatory arrangements are fully in place, the ACA intends to allow some licensees to determine, for themselves, whether their installations comply with the standard. In anticipation of these changes, the ACA is making the self-assessment materials available to licencees to trial on a voluntary basis.

The trial will assess the effectiveness and user-friendliness of the self-help guidelines by obtaining feedback from the licensees, which will enable the ACA to fine-tune the materials. The trial will also provide licensees with the opportunity to bring their installation into compliance before compliance becomes mandatory.

The self-assessment materials include charts and graphs that will allow trialing for the following radiocommunications services:

- Fixed Link
- Land Mobile Base Station
- Low Power TV and Radio Broadcast
- Paging
- Amateur Radio
- General Radio

The materials are designed to assist licensees to make a simple assessment of whether their transmitting facilities comply with the EMR standard.

The self-assessment materials are available for trial from **15 September 2000 to 15 January 2001**. Licensees using the materials are required to return an evaluation questionnaire to the ACA. Participants may also be offered a free validation of their assessment through measurement by the ACA.

Licensees wishing to take part in the trial may obtain the materials via the ACA's website www.aca.gov.au/standards/emr.htm or by contacting the ACA on telephone:

(02) 6256 5552.

The Active Loop Converter at VLF

The Tuning Range of the Converter can be extended down to VLF with the addition of a few components

Lloyd Butler VK5BR

The original active converter as published in the July 2000 issue of Amateur Radio was made to tune the LF range of 128 to 490 kHz. Components have since been added to enable tuning down to around 12 kHz. The following text describes how this was done.

Circuit Detail

In previous loop circuits described by the writer (references 2 & 3), extension of loop tuning down to VLF was achieved by progressively switching in fixed shunt capacity across the loop using capacitance values as large as 0.47 microfarads. At the lowest frequencies, loop resonance was available at a number of spaced fixed frequencies with the shunt variable capacitor of 1350 pF having little effect . The system was workable between these spaced frequencies without fine tuning because with such a large capacitance across the 500 uH loop, the tuning response curve was very broad.

However the active loop circuit is aimed at very high values of Q which makes the tuning very sharp. Hence there is a need for fine tuning adjustment. So in this circuit, switching in of fixed shunt capacitance is limited to lower values and series inductance is added instead of large capacitance.

The circuit modifications are shown in figure 1. The original circuit provided the following tuning ranges:

Switch S1 pos. 1 - 195 to 490 kHz (no fixed capacitance)

" pos. 2 - 150 to 220 kHz (C2 in circuit)

" pos. 3 - 128 to 160 kHz (C3 in circuit)

A fourth switch position has been added to S1 which switches in C18 to provide tuning of 110 to 130 kHz without any series inductance.

A further addition is the inclusion of switch S2 which allows the progressive addition of series inductance by the selection of switch positions 2, 3, 4 & 5. By suitable selection of fixed inductance and capacity using both S2 and S1, peak tuning of the circuit using variable capacitor C1 is achieved for a continuous frequency range down to 12 kHz.

Apart from the ability to properly peak the loop circuit, the converter at VLF is far more lively loaded with inductance than with the shunt capacity. This probably results from the higher L/C ratio and the higher resultant static Q.

The inductors used are 2.2, 10, 22 & 50 mH. The 2.2 and 10 mH inductors are miniature chokes available from Dick Smith Electronics. The higher value inductors are ferrite pot cores which were retrieved from somewhere else. The 22 mH one was already wound for that inductance but the 50 mH one had to be rewound. As the characteristics of the pot core was not known, a test winding of a given number of turns was first made and the inductance measured. Given that inductance is proportional to the square of the turns, the correct number of turns for the required inductance was easily calculated form the initial number of turns and the measured inductance.

The effect of high Q

The publishing of the original article (ref. 1) has raised some discussion on the effects of running a very high loop Q. Here are some of these effects:

1. If the Q is set too high on AM or SSB the bandwidth could be too narrow and speech quality could be impaired.
2. Higher Q can be used with keyed CW than for speech because the bandwidth required is less. However there can still be an upper limit when the loop as a tuned circuit tends to ring and destroy the keying intelligibility.
3. Even a moderate value of Q might be sufficient to prevent a noise blanker circuit working in the receiver. Noiseblankers only work on impulse type noise i.e. high level pulses of short duration such as generated by spark discharge. The blanker works by closing down the receiver for the short duration of the pulse. If the pulse is fed through a high Q circuit, the short duration, high level nature of the pulse is destroyed and the blanker can't operate. Here is a case for having a switch to connect in a series resistor with the loop to reduce Q to a very low value. For broadband noise, use the maximum Q to reduce bandwidth. For impulse noise it might be an advantage to switch in the resistor and use the blanker with wider bandwidth. .
4. The ratio of signal level to noise generated by the loop interface amplifier can be improved by raising the natural loop Q to raise signal voltage. However this ratio is not improved by the enforced higher Q due to the feedback as the amplifier noise is itself within the feedback loop. The main advantage of the feedback is the lowering of the noise power in the narrowed bandwidth created by the higher Q. It also reduces the chance of high level signal or noise outside the received signal passband from causing intermodulation in the mixer stage.

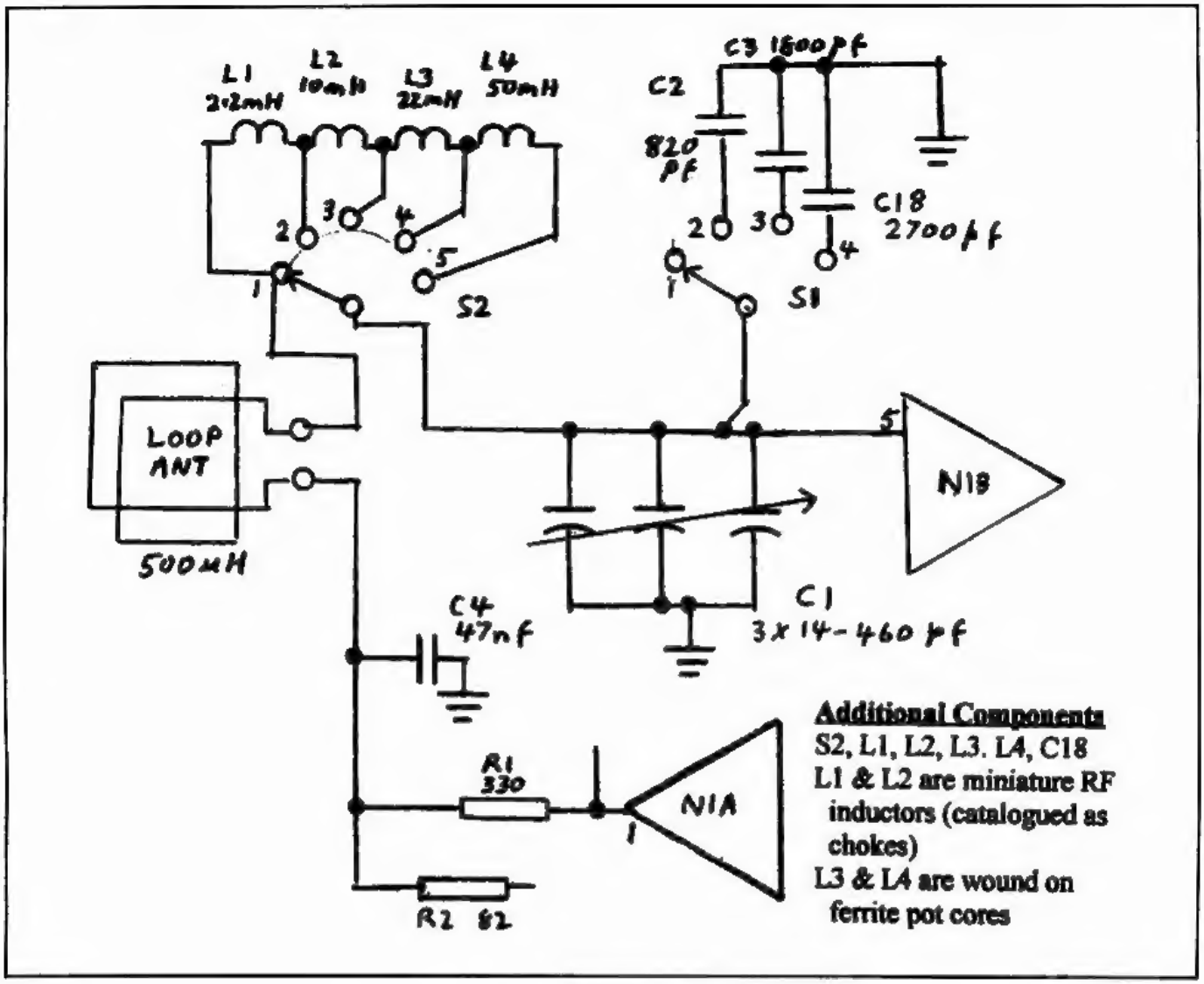

Figure 1

On this subject, signal level into the amplifier can also be raised by increasing the number of turns or increasing the area of the loop. However an interesting point on the loop's own noise has been raised in an article from Break-In (ref. 4) which was kindly sent to me by Richard Rogers VK7RO. The ratio of signal level from the loop to the noise level generated from its own loss resistance is improved by increasing area but increasing turns makes no difference to that ratio. On figures shown, the loop noise can be comparable in level to that of the incoming atmospheric noise if the loop area is too small. To ensure that the noise floor is set by atmospheric level and not the loop itself, the writers suggest that for a circular loop, its diameter should not be less than 1 metre. .

Summary

The main purpose of the article has been to describe how the Active LF converter is modified to extend its tuning down into the VLF region.

Before concluding we have also digressed a little into effects of enforcing the higher operating Q and commented on one factor affecting S/N ratio in the loop itself.

References

1 An Active Loop Converter for the LF Bands - Lloyd Butler VK5BR Amateur Radio, July 2000.

2. VLF-LF and the Loop Aerial - Lloyd Butler VK5BR, Amateur Radio, August 1990.

3. Modifications to the Bandwidth Limiting Converter to include VLF, Lloyd Butler VK5BR, Amateur Radio, March 1994.

4. LF Scene - Andrew Corny ZL2BBJ & Bob Vernall ZL2CA, Break-In, July 1997.

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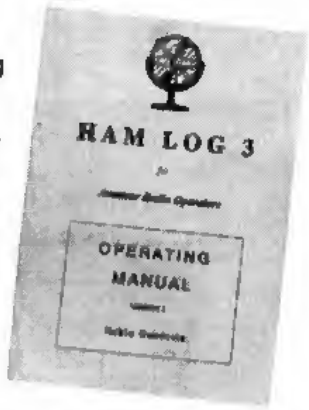
Ham Log 4

A station log keeping program

We first reviewed Ham Log version 2-2 in *Amateur Radio* for April 1994 on page 13. Then the humble personal computer had started to prove itself as very adept at keeping data in a form that allows for easy recovery. That is now common knowledge.



Ham Log Version 4 is a progression incorporating concepts that have become apparent through use. They are operational and also a rare bug (relating to the first contact for a country) has been fixed. .

The first thing is Y2K compliance. Remember that one? The reason for including this becomes apparent in the explanatory note at the end of the article. Ham Log 4 is Y2K compliant. (It is timely to note that the world did not collapse and hopefully it is the last time Y2K will be mentioned).

Ham Log was written to take advantage of the computer's ability to analyse data rapidly. It enables the operator to take advantage of past activity to provide information, at the touch of a button, relevant to a correct contact. This can range from an operator's name to working out if a particular station provides that all-important multiplier in a contest or would be a useless duplicate entry. In the big contests it can be the difference between stardom and being an also ran.

Entering contacts into *Ham Log* is made on a separate screen, requiring name, QTH, RST (both sent and received) and any comments. Other information is provided automatically by the program including the times that the QSO started and finished. Refinements with Version 4 are that the frequency can be preset and the QSO login screen can be configured to be start-up screen. When the QSO is complete, the system then prompts for a new call sign using the frequency of the last QSO. The frequency only needs to be entered after a QSY. Clearly the emphasis has been to make the program as easy as possible to log contacts. The old adage of log them first and worry about the paperwork afterwards applies.

This program contains the features that heavy log users need. It is light in the frills.

Since that comment was made about Version 2.2, improvements have been made that have been guided by experience. As examples to eliminate some of the error messages, only those requiring attention are now displayed. The rest is handled by the software.

The country and prefix listings have been revised for Ham Log 4.

As with any good database, *Ham Log's* country listing can be revised as new prefixes are notified. Prefix listings also use time as a parameter. This means that having worked a particular prefix, the contact remains valid even with relocation of the prefix. Also, the correct country for that prefix at that time will always appear.

The text editor has also been revised to remove the necessity of using some of the control keys. This simplification has the effect of speeding up data entry during contests.

Alternatively, text can be entered for a particular date and this will be added to each QSO on that day. The text editor provides a method of including those extra notes that never conforms in a computerised log entry field and can be invaluable.

Ham Log keeps statistics on log contacts such as the number of countries worked versus the mode and frequency. The same statistics are kept for confirmed contacts, for quickly determining if the DXCC has been reached. Ham Log will also keep a list of stations for which a QSL has been promised and, if necessary, print the QSL label itself in any of three formats. The new version has incorporated some changes made under the DXCC rules eg entities

Changes have been made is the data searching and recovery area too. The Custom Field menu now allows for temporary changes like station call sign in the custom field. The only use I found for it to create a list that compensated for a station running multiple call signs in a contest, against the rules of that particular contest.

The file maintenance software is now separate from *Ham Log*. While it is there to repair files with corrupted data, I never had a reason to use it. In the review of version 3 *Norton Utilities* had to be used to corrupt the data to see if the software repair works. It worked then and I suspect it still does. Data corruption has never been a problem.

The manual does come as a text file on disk. This seems to be the current environmentally friendly mode for providing manuals, but I find that it is best to print it. While the manual doesn't get that much exercise, I find that there is nothing quite like the printed word. My first port of call will remain the manual that came with version 3 (pictured).

The program is meant for IBM compatible computers running MS-DOS version 6.or later. My old 386SX operating under DOS 5 was able to run the program when some of the device drivers were loaded into the upper memory blocks. It has been operating as DOS program within *Windows* (with its own icon). The program has also been used on a 10 year old Toshiba laptop that was made redundant by modern software; it worked well on the field day. As most modern PCs don't come with less than 1 Mb of RAM, memory is not a problem.

The review copy came on a 3.5 inch 1.44 Mb floppy disk. Our copy was provided by Robin Gandevia VK2VN of Applied Bytes, 6 Carrington Road, Waverley NSW 2024, Telephone 02 9369 2218, Facsimile 02 9369 3069

Editor's note

This article was very late going to print; something that we regret. It was due to a change in production houses and a computer upgrade Thankfully all articles are registered by the office on receipt. It was due to record keeping that we recovered this review.

Our apology to Robin Gandevia VK2VN.

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Club News

Adelaide Hills Amateur Radio Society

The end of the year is a busy time for us all and for the AHARS it signals the big event of the year, the Buy and Sell. This year it was held on 25th November and was the usual gathering of Adelaide radio amateurs as well as a busy venue where equipment of all sorts was exchanged.

Over 20 tables of goods were on display and over 200 people passed through the doors. Most of them had 'treasures' in their hands as they left but all of them had renewed friendships with amateurs they may only see once a year. At times the noise is almost overwhelming but is an indication of the talk that is going on within the hall.

It was a hotter day than ideal but the air-conditioning worked marvelously so despite the numbers in the hall the temperature remained comfortable.

On December 2nd the year's club activities finished with the Christmas Dinner. Nearly 60 people attended and a thoroughly enjoyable time was had by all. If there was any problem it was that most of the raffle prizes were won at one table.

The first meeting in the New Year will be at the Elizabeth Radio Club's water tower that will be interesting to everyone.

If you are visiting Adelaide at any time, remember the AHARS monthly meeting are held on the third Thursday of the month and all are welcome. Please contact the President, Geoff VK5TY or the Secretary, Alby VK5TAW for details QTHR the callback

Correction

Diagram correction for ***Phased Verticals for 10 metre Mobile Use*** December AR Page7

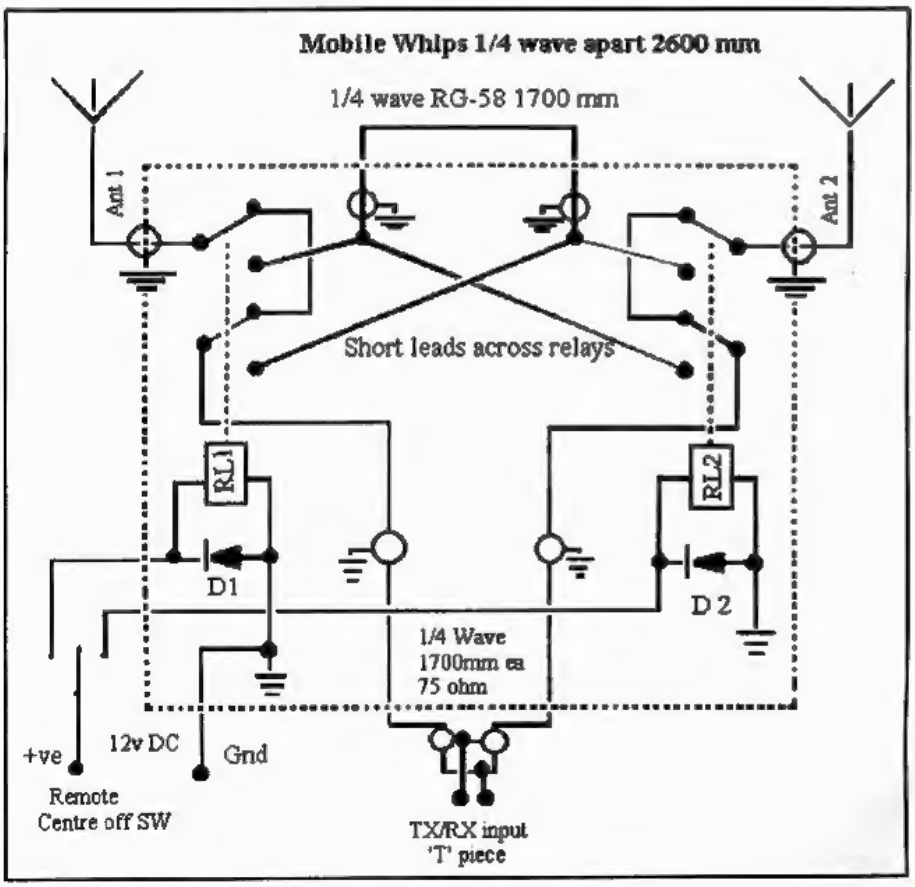

Figure 1

Geelong Radio & Electronics Society

HISTORICAL RADIO DISPLAY

Portarlington Summer Festival, Saturday 20 January, 2001.

Admission FREE

GEELONG RADIO & ELECTRONICS SOCIETY wish to remind everybody of the Historic Radio display at the Portarlington Summer Festival to be held on Saturday January 20th.on the foreshore reserve commencing at 10 o'clock. A large selection of Antique and Historic radios will be on display as well as working HF & VHF units.

We extend an invitation to all to come along and have a day out and view our display.

We also remind all that our Historical Radio Museum is open every weekend at the HISTORIC Geelong Prison Myers Street Geelong.

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A W2PV 4-element Yagi for 6 Metres

Drew Diamond, VK3XU,
45 Gatters Rd., WONGA PARK, 3116.

Regular readers of the VHF/UHF column in this journal will often see news of exciting DX on 6 m. One of the great attractions of 6 m is the possibility of spectacular openings (in VHF terms) on that band. Naturally, to have a better chance of working long distances, a reasonably good directional beam antenna is required.

It is generally agreed (Ref. 1) that a Yagi style antenna offers the most acceptable performance in terms of material cost, ease of construction and commissioning, mainly because the device may be fabricated from ordinary aluminium tube, the feedline connects only to a single element (the driven element), and the structure occupies a horizontal plane, which makes the Yagi easy to mount and rotate.

It is claimed that the W2PV beam (Ref. 2) has about the highest gain (8.6 dBd) obtainable for a 4-element array. The elements are spaced approximately one quarter-wavelength, which makes the boom rather longer (at about 4.6 m) than a scaled-down HF array would be, but is not so long that the assembly becomes difficult to work with single-handed. Such wider element spacing renders element length less critical, improves operating bandwidth, and increases the radiation resistance of the driven element, which therefore reduces ohmic losses in that element (Refs. 3, 4 and 5).

The dimensions given in Fig. 1 are for operation at the low end of the 6 m band. After adjustment of the gamma match (described later), SWR for my model is less than 1.2 from 50 to 50.5 MHz, less than 1.5 from 50.5 to 51 MHz, rising to 2 at 52 MHz. Measured front to back ratio is about 16 dB near 50.2 MHz (using a TV transmitter spur as test signal).

For the main boom I have used a 4.6 m length of 25 mm/1 " aluminium tube. All four elements- Reflector, Driven Element, Director 1 and D2 are made from 12.5 mm/0.5 " al. tube. The elements are mounted upon the boom using clamp plates made from 110 x 70 mm, 3 mm thick al. sheet, drilled to accommodate suitably sized zinc-plated U-bolts (Photo 1). The clamp for the driven element will require a right-angled extension bracket to accept the SO-239 coaxial socket for the gamma and feed-line.

To better support the element and prevent crush where the U-bolts are tightened, the element should be inserted through a 150 mm length of al. tube whose inside diameter is slightly larger than the element diameter. The support tube must have one hack-saw cut longitudinally before it is slipped over each element. The saw-cut allows the tube to compress a little, thus firmly clamping the element in position. Upon assembly, the cut must be located at the 3 or 9 o'clock position.

Zinc and aluminium are quite close on the cathodic corrosion scale. However, in all instances where there is a metal-to-metal contact, particularly between zinc and al., and on threaded components, apply a smear of petroleum jelly when the components are assembled in order to fill small voids and exclude moisture.

Ordinarily, the balanced impedance at the centre of the driven element of a Yagi is not a particularly good match to 50 ohm coax, so some kind of impedance and balanced-to-unbalanced matching device is required. The most popular scheme is probably the gamma match. Working from the centre of the element, the coax is tapped into the 50 ohm point along the element's length. However, there will always be some residual inductive reactance present, so an appropriate amount of series capacitive reactance is required to cancel the inductive component and thus obtain a resistive (non-reactive) match to our 50 ohm coax. The actual physical capacitor must be adjustable, of high Q, be capable of withstanding high RF voltages, and exclude dust, insects and moisture.

In this application, one of the easiest

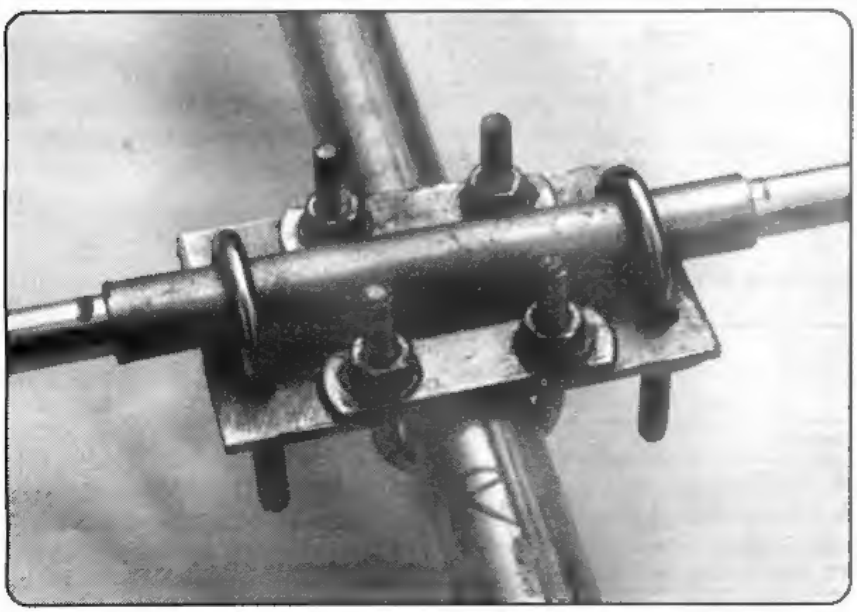


Photo 1: element clamp plate

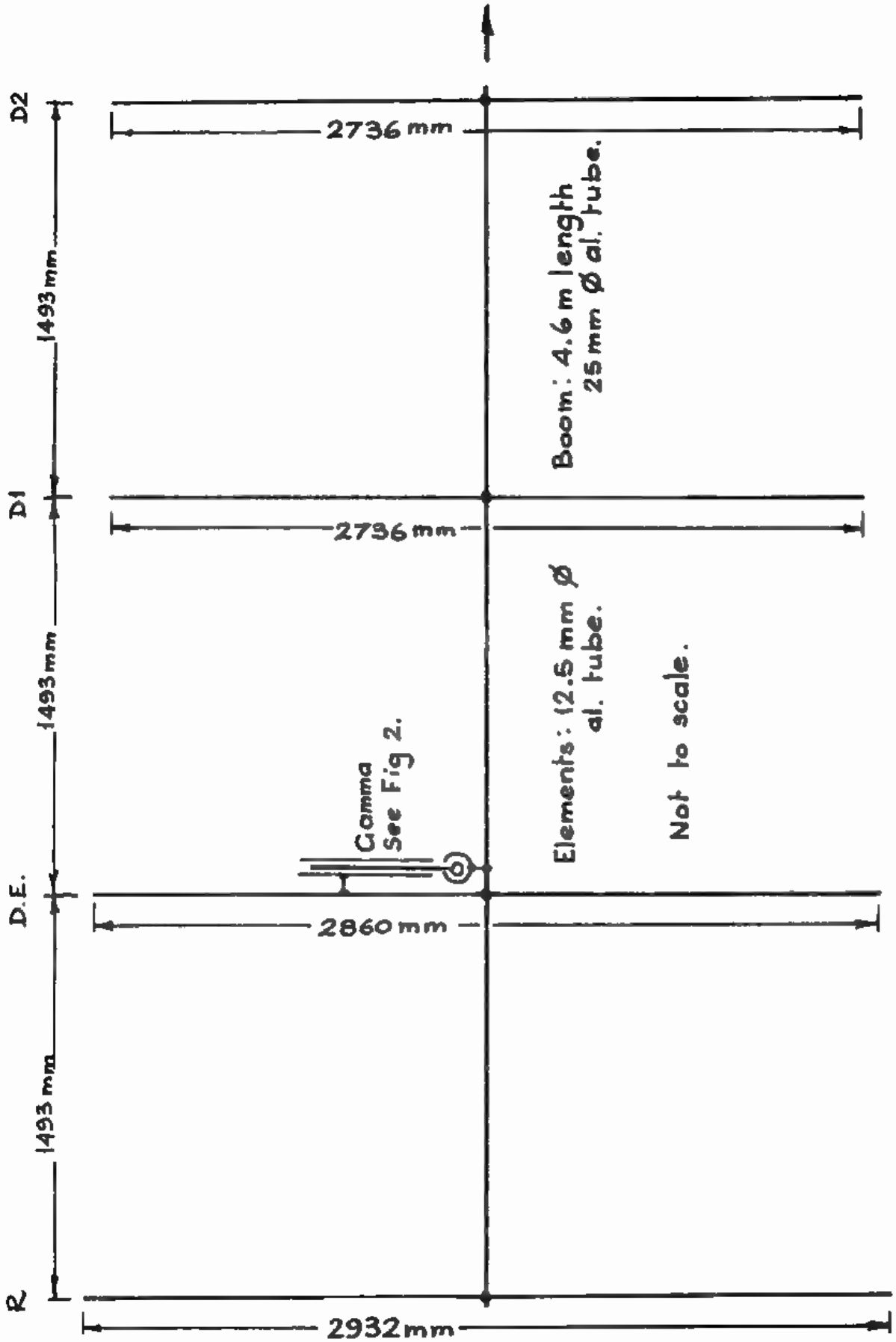

D2
2736 mm
1493 mm
Boom: 4.6 m length
25 mm Ø al. tube.
D1
2736 mm
1493 mm
Elements: 12.5 mm Ø
al. tube.
Not to scale.
Gamma
See Fig 2.
D.E.
2860 mm
1493 mm
R
2932 mm
Fig. 1.

Figure 1

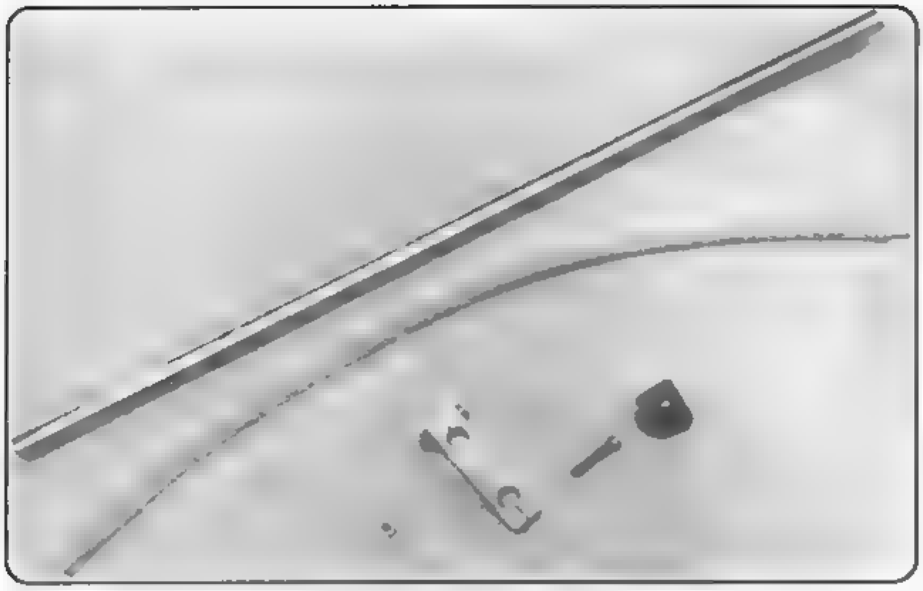


Photo 2 Gamma components

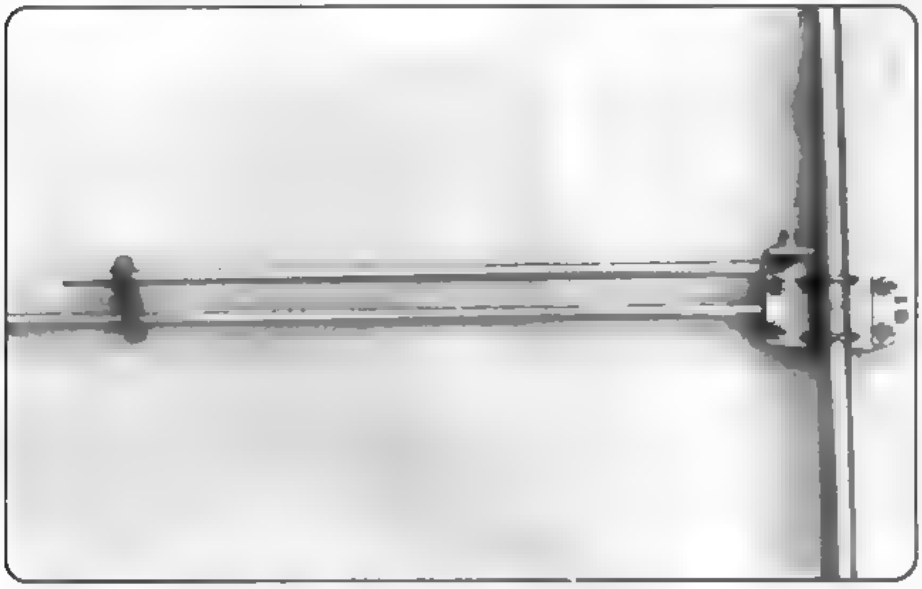


Photo 3: Gamma assembly

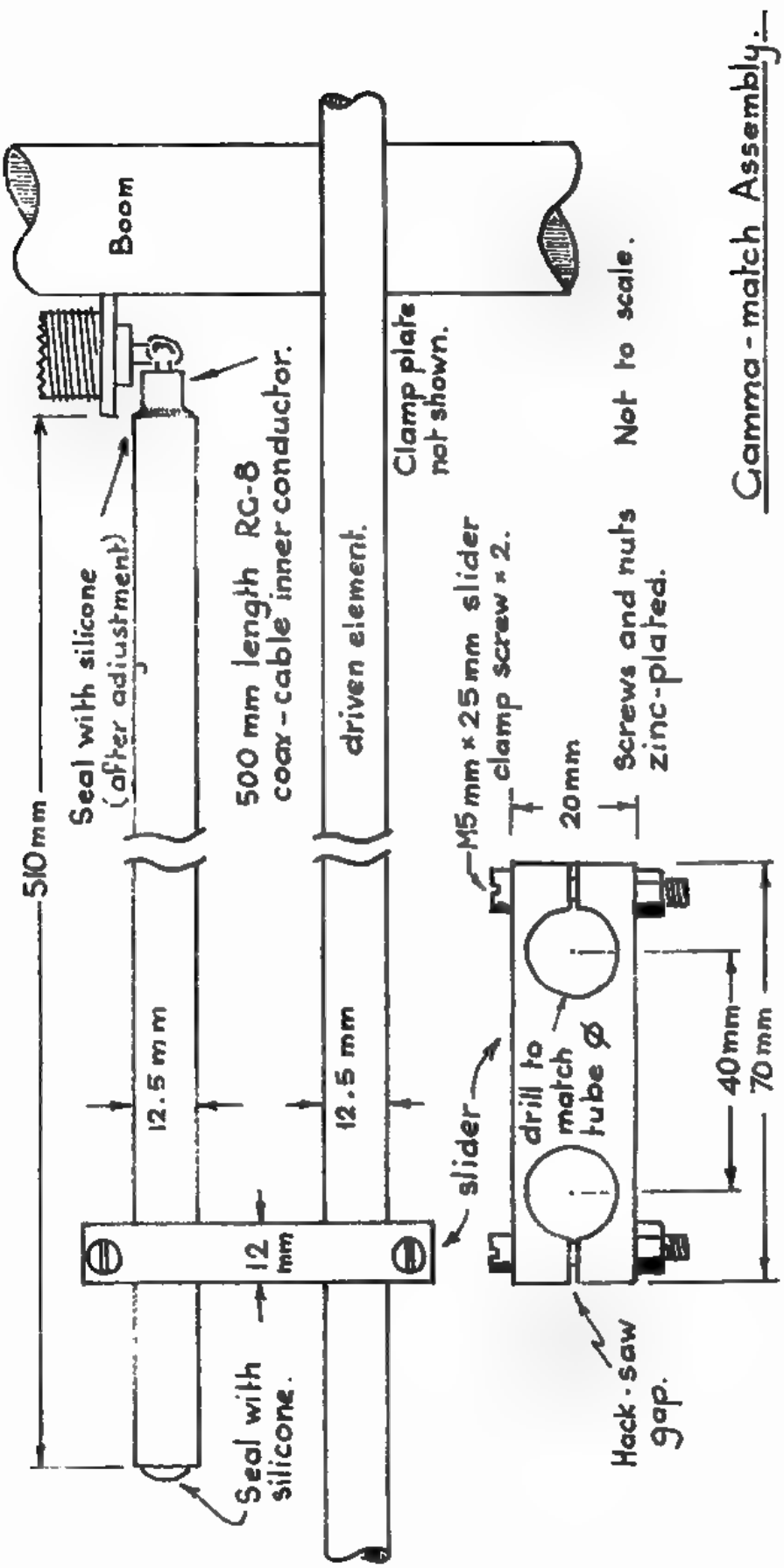
Photo 4: Adjusting the gamma

to make and most effective capacitors is obtained by simply inserting a length of RG-8 coax inner conductor inside a suitable length of al. tube to make an adjustable coaxial capacitor. The components of the gamma are shown in Photo 2 and Fig. 2. The slider may be comprised of a rectangular section of al. rod with drilled holes spaced 40 mm as shown. A slit is made at each end of the slider, which is also drilled to accept a pair of M5 X 25 mm zinc-plated clamp screws and matching M5 nuts. The complete gamma assembly is shown in Photo 3.

Use a large flat surface as your work area during assembly, which greatly assists in getting all the elements to lie straight and parallel. Appropriate felt-tip pen markings upon all elements will ensure their correct order (label them as they are cut to size) and their central positioning upon the boom.

If it is not easy to set the gamma with the antenna in position, it may be adjusted at ground level. Using a convenient sky-hook, mount the antenna in a clear spot (well away from any metal objects, and particularly anything that looks like it may be resonant at 6 m) with the boom vertical and the reflector at or near ground level Connect an SWR meter in the feedline close to the gamma using a short length of 50 ohm line (Photo 4). On a clear frequency (but see last para. below), apply the smallest CW carrier signal that gives a meaningful reading on the SWR meter- say 1 W. Remove power whenever you make an adjustment- although it should not burn if accidentally touched. Start with the slider about 70 mm from the rod end, and about 50 mm of coax inner exposed. Experiment with slider position upon the driven element and the amount of capacitance (depth of coax insertion in the gamma rod). You should find a combination of settings which gives a very low SWR reading If you intend working over a wide frequency range, some compromise will be necessary- otherwise adjust for best SWR at your favourite frequency It should be found that the SWR alters little when the antenna is mounted in it's final clear position. When satisfied with the match, seal both ends of the gamma rod with acid-free silicone.

Fabricate a mast mounting plate similar to those for the elements, with U-bolts to suit your pipe mast Photo 5



Gamma-match Assembly.-

Fig. 2.

Figure 2

Photo 5: Mast/boom bracket

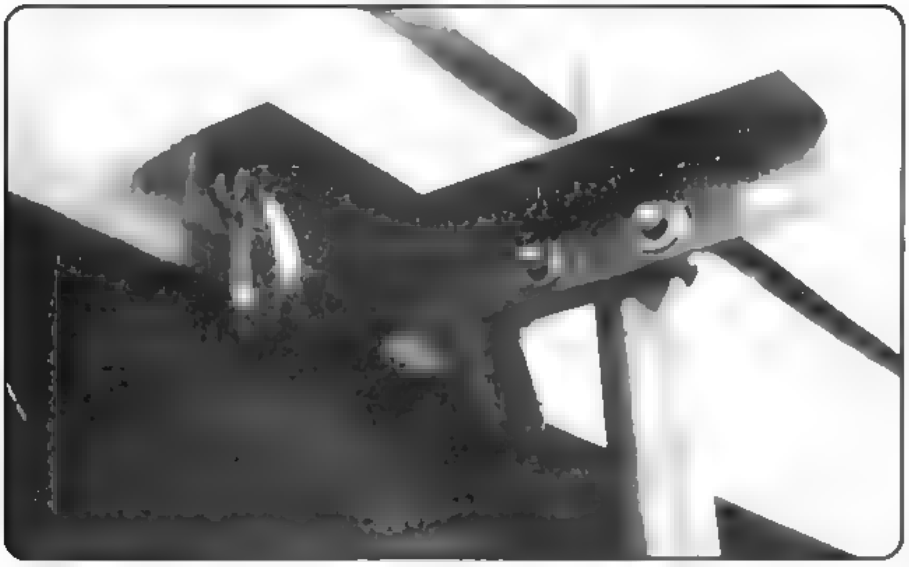


Photo 6. Fascia mount

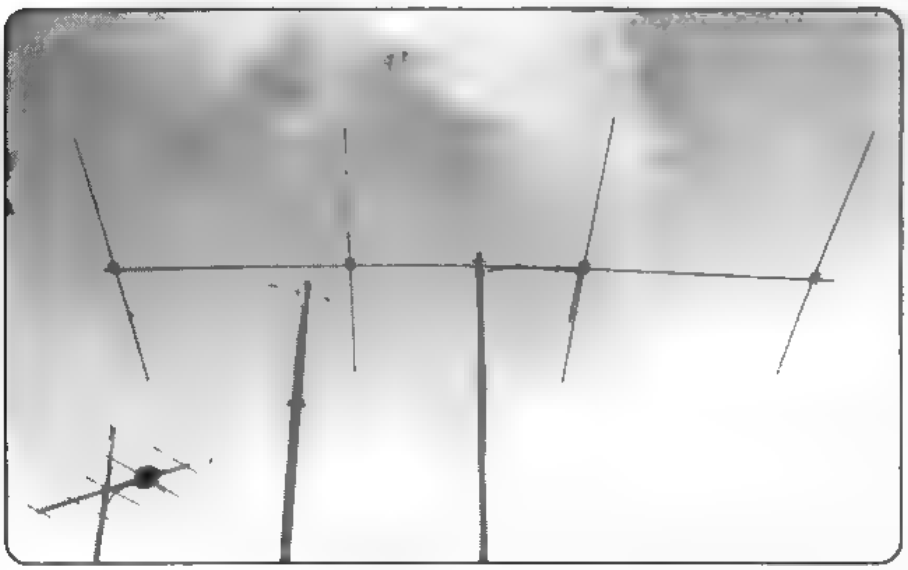


Photo 7: Antenna aloft

shows the antenna bolted to a Radio Parts 'zip-up' TV mast. Use good quality low loss 50 ohm coax (RG-8 or similar) to connect the antenna to your radio. Wrap several layers of black PVC tape around the PL-259 connector in order to keep moisture out of the coax fittings, and tape the coax feedline onto the boom and mast at appropriate intervals.

Depicted in Photo 6 is a suggested simple method of securing a mast to the fascia of the shack using a right-angled 'angle-iron' welded bracket and two G-clamps. The pipe is fixed to the bracket with a muffler clamp- just tight enough so that the mast may be turned by the 'Armstrong' method. The bottom of the pipe mast rests upon a steel rod and collar driven into the soil. The completed beam is shown in Photo 7.

Interestingly, the very weekend that the beam was ready (1100Z Sat. 111100) 6 m fans enjoyed a marvelous opening, with many JA's and other DX pouring into VK3. If new to 6 m, it is strongly suggested that you consult the band-plan in the WIA Callbook, and do some serious listening first (look for CW beacons between 50.0 and about 50.1 MHz) to get a 'handle' on the rather different characteristics and operating techniques used there.

References and Further Reading

1. The VHF/UHF DX Book; I. White, G3SEK (ed.) and nine authors, DIR Publishing.
2. Yagi Antenna Design; J. Lawson, W2PV, ARRL (1986).
3. Any recent ARRL Handbook.
4. Radio Handbook, 23rd edition; Wm. Orr, W6SAI (ed.), H. Sams Publishing Co.
5. Radio Communication Handbook, 7th edition; RSGB

■

SILENT KEYS

The WIA regrets to announce the recent passing of:-

J H L (John) FIELD VK2AKF

W C GOODMAN VK3JFQ

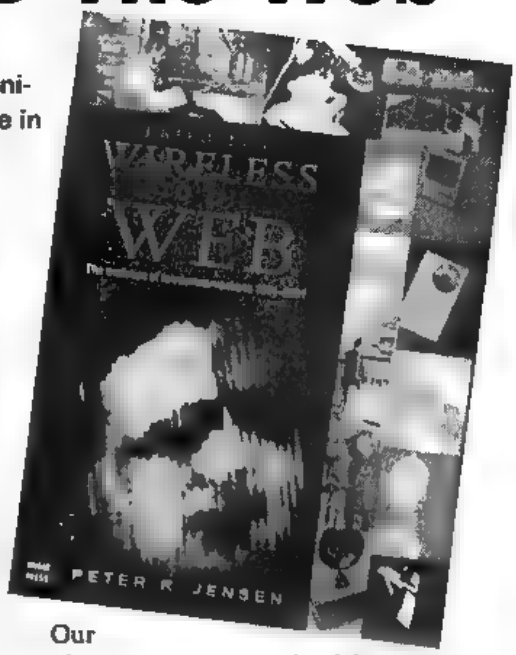
(Les) Bell VK4LZ

P L (Philip) HAY VK6AQO

Book Review

From The Wireless To The Web

In a fascinating 18 chapters and 300 pages, well known radio amateur and author Peter Jensen VK2AQJ leads us through the evolution of telecommunications from its first days of experimental use in the 1830's to current usage in GPS receivers and the World Wide Web.



Published by the University of New South Wales Press, the book is profusely illustrated with many diagrams and photographs from many sources including the author's own archives.

It is not a technical treatise, nor was it intended to be one. No one book could possibly cover the intricate pathways connecting early attempts at long distance communication using firstly wires and progressing to the electromagnetic medium. In Peter's words, "Here is the story of the creation of the system of international communications based on the cable, then radio, and more recently, the satellite". It also relates how the need for secure communications during world wide wars was the catalyst for a change in technology.

Peter has not forgotten the work of those whose inventiveness and sheer genius, eventually led to the development of the modern day computer. The work of Pascal, Babbage, Liebnitz and others is described, relating the frustrations and eventual triumphs of these men. Later in the book he links computers to modern communications systems, and the World Wide Web.

The author has broken his work into time related sections, thus being able to discuss improvements and development of technology. From Marconi's early spark transmitters in the early 1900's, Mawson's use of radio during his expeditions to Antarctica, through the invention of the transistor and consequent miniaturisation of devices and different modes of communication. Early experiments in television are also not forgotten.

This reviewer was at first a little intrigued at the inclusion of material devoted to codes and encryption, the invention of the German "Enigma" encoder/decoder machine and Britain's "Colossus" computing machine as envisaged by Turing, Newman and others at Bletchley Park. But of course, coded messages were transmitted and intercepted by radio, so the connection is very clear.

The part played by amateur radio operators is also not forgotten, noting that just as today, many of these first amateurs were also highly qualified electrical engineers.

Having seen the great strides made in communications technology, particularly since the late 1930's (many of these as a result of the exigencies of war), a reader of this book could hardly put it down without wondering what the next half century will reveal.

A thoroughly good read, and one that is recommended for the radio amateur, and those interested in the technology.

Our review copy was received by courtesy of the Publishers, the University of New South Wales Press, Cliffbrook Campus, 45 Beach Street, COOGEE NSW 2034.

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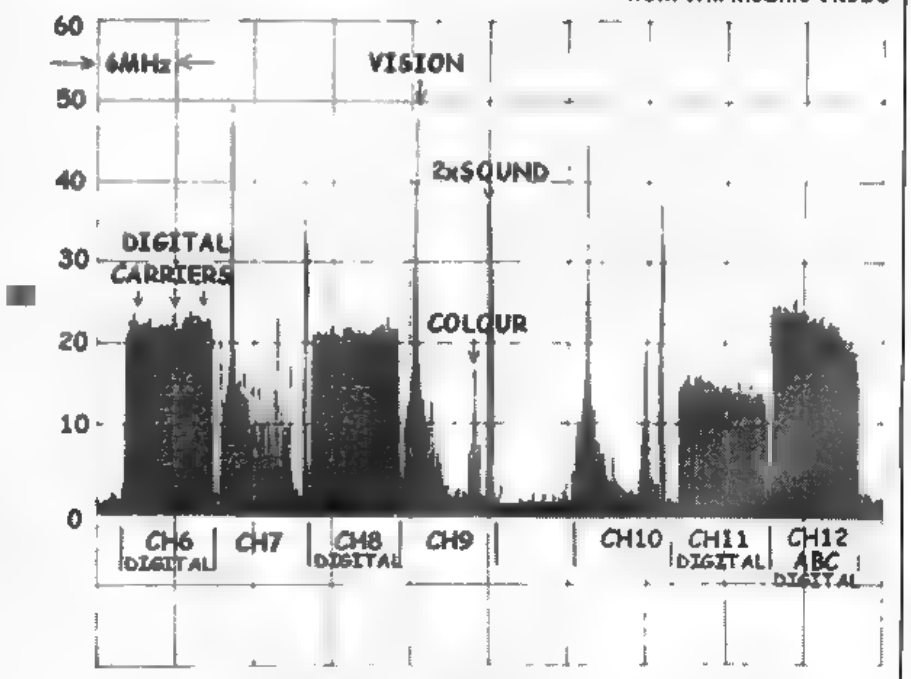
Digital TV Signal

from Will McGhie VK6UU



Digital TV Spectrum as of 22 December, taken from a spectrum analyser in Perth

The 'Good Enough'

A fifty-cent Morse key that's easy to build

Peter Parker VK3YE
12/8 Walnut Street, Camegie, 3163 Email
parkerp@alphalink.com.au

Do you need an extra Morse key for portable operation'? One that's small, light and cheap? If you're lucky, you might come across an old Army type at a ham fest. If not, it might be time to build your own — after all, what can be easier than a simple switch?

The 'Good Enough' may be the homebrew key for you. Unlike other designs, its assembly requires no lathes or other power tools. The project can be built in about two or three hours. All parts are easily obtainable and are common junk box items. The only purchase made for the prototype was the polyethylene chopping board for the base - bought for fifty cents from the local op-shop.

As its name suggest, several compromises have been made to make construction possible for the average amateur without access to a fully equipped workshop. These include the absence of conventional contact points, the fulcrum at the end, rather than in the centre, and the lack of an adjustable tension setting. As the photos demonstrate, the original 'Good Enough' is hardly an example of fine craftsmanship.

Gathering the materials

Most of the items required for the key are common household or amateur shack items. Many can be purchased from hardware or electronic stores. Ideas for improvisation are given in the parts list below.

Assembly

After gathering the materials, consider how they will fit together and cut to size, if necessary. Without assembling anything, play with the arm and available springs to find the one with the keying action most to taste. This is done by using one hand as the fulcrum and using the other to press the knob end.

Figure One is a scale drawing of the key. All major items are labelled. Start work on the arm of the key. Use a vice or bending tool to bend the fulcrum side of the arm back on itself A bend that is too sharp may weaken the metal, while one not sharp enough will not allow the arm pivot sleeve to fit snugly. A drill bit or similar may be useful as a mandrel around which to bend the metal.

With the gentle assistance of a

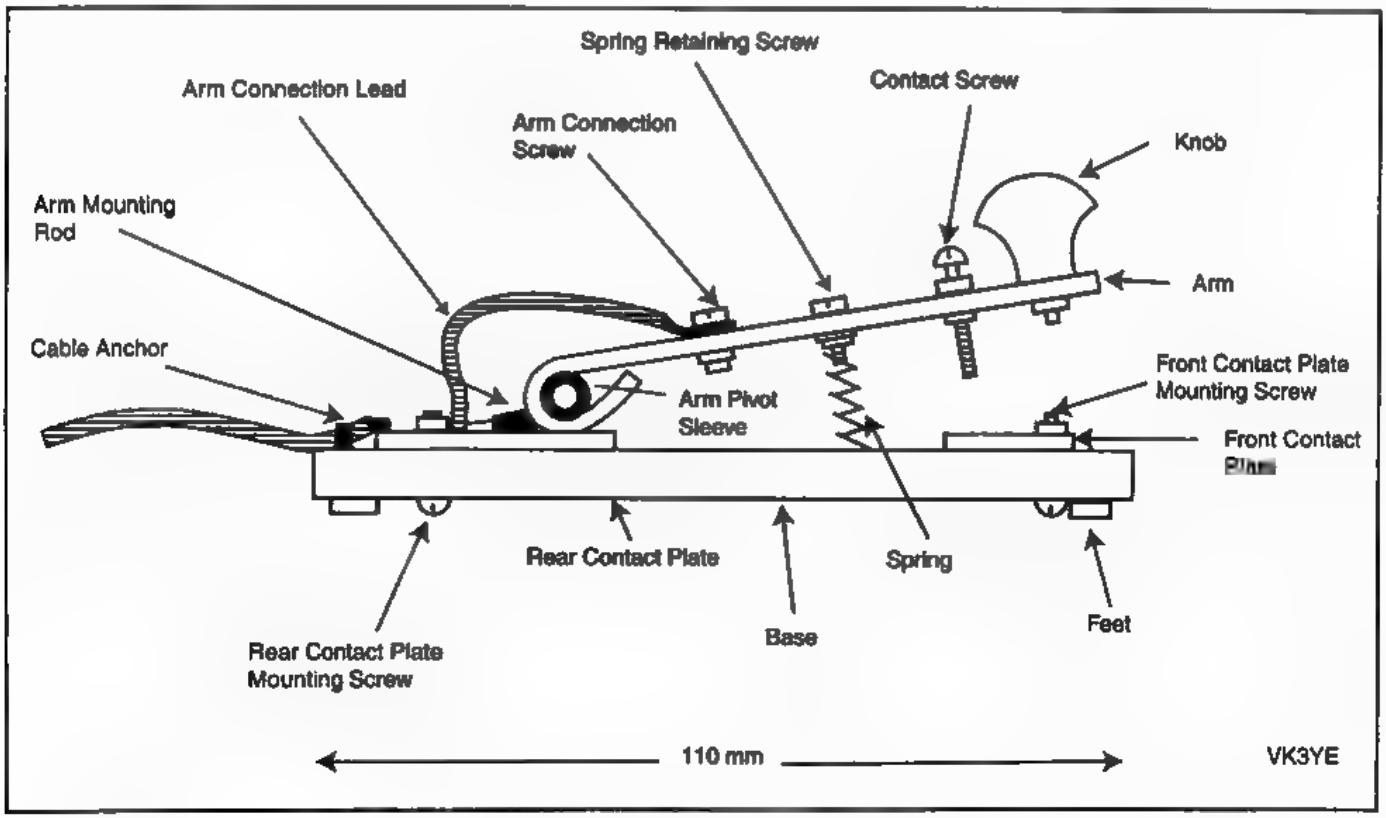


Figure One: Drawing showing construction of key

hammer, install the arm pivot sleeve. It may be necessary to bend this sleeve with pliers so that it is no longer circular. This is acceptable, provided that the arm-mounting rod can still be slid inside. Use glue if necessary to anchor the arm pivot sleeve to the arm. Note that no electrical contact between the arm and the arm-mounting rod is required - a reliable connection is provided by the flexible arm connection lead.

Drill the four holes required in the arm These are for the knob, contact screw, spring retaining screw and the arm connection screw. Mount the knob, contact screw, spring retaining screw and spring (don't forget the washer) and the arm connection screw (including eye terminal for arm connection lead) to complete the arm. Note that the contact screw has two nuts to allow the contact spacing to be varied.

Tin the two PC board contact plates. With the completed arm, find suitable spots for these plates. Bend the coat hanger arm-mounting rod so it can be conveniently soldered to the rear contact plate. Before soldering, sand and tin the mounting rod ends - this will make soldering easier. Check that the arm can move up and down freely with a minimum of sideways sway. Then find a suitable location for the front contact mounting plate. This plate should be insulated from the spring at all times. Space should be left for the cable anchor. In the prototype, this was mounted on the base near the rear contact plate.

When the best positions have been found, drill appropriate holes. Both contact plates are mounted with just a single screw, though more could be used if desired. Sand and tin both nuts and solder them to their respective boards. Solder the free end of the arm connection lead to the rear contact plate.

Thread two-conductor cable through the cable clamp. Cut the ends of the cable to size - the side making contact with the front contact plate should be the longest. Solder each lead to a contact plate and fasten the cable clamp with a screw. Glue the bottom of the spring to the base (though a screw, washer and nut may provide better long-term reliability). Finally stick the adhesive feet to the underside of the base

Testing and operation

Use a practice oscillator or audible continuity tester to check that the key

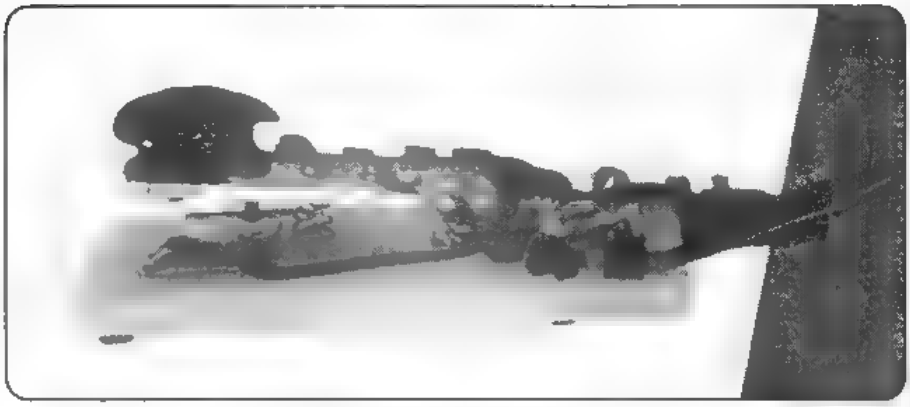


Photo One: The completed key - side view

Photo Two: The completed arm

Parts list

Base: Insulated material 110 x 40 x 6 mm (eg cut from polyethylene chopping board)

Feet: Self-adhesive - four required (or use glued rubber squares)

Knob: 15mm diameter with thread (use door knob or mobile mounting bracket knobs)

Arm: Aluminium. 80.x 13 x 3mm

Spring: compression type, 6mm diameter, 10mm uncompressed

Front contact plate: Blank PC board material 20 x 20 mm

Front contact plate mounting screw: 3mm diameter, 12mm long, with nut.

Rear contact plate: Blank PC board material 20 x 40 mm

Rear contact plate mounting screw: 3mm diameter, 12mm long, with nut.

Contact screw: Brass — 3mm diameter, 12mm long, with two nuts.

Spring retaining screw: 3mm diameter, 6mm long, with washer and nut.

Arm connection-screw: 3mm diameter 6mm long with eye terminal and nut

Arm pivot sleeve: 13mm of3mm diameter. metal tubing (brass tubing from old model shops or a section of telescopic antenna)

Arm connection lead: Copper braid: 40mm long (from RG58 coaxial cable or desoldering wick)

Cable anchor: Plastic cable clamp for 4mm cable, screw fit

Cable anchor mounting screw: 3mm diameter, 15 mm long, with washer and nut

works. Pressing the key should cause a sound to be heard If not, look for bad connections. Likely problems include the contact screw not making contact with the front contact plate when the key is pressed and a poor connection between the arm and the rear contact plate via the arm connection lead.

Adjust the contact screw to vary the spacing between it and the front contact plate when the key is up. A spacing of I to 3 mm is adequate.

Conclusion

A Morse key has been described which is both cheap and easy for the amateur without a workshop full of power tools to duplicate. It makes use of available materials and can be built in a few hours. Though not a replacement for the main station key, it should be 'good enough' for most short-term and portable operation.

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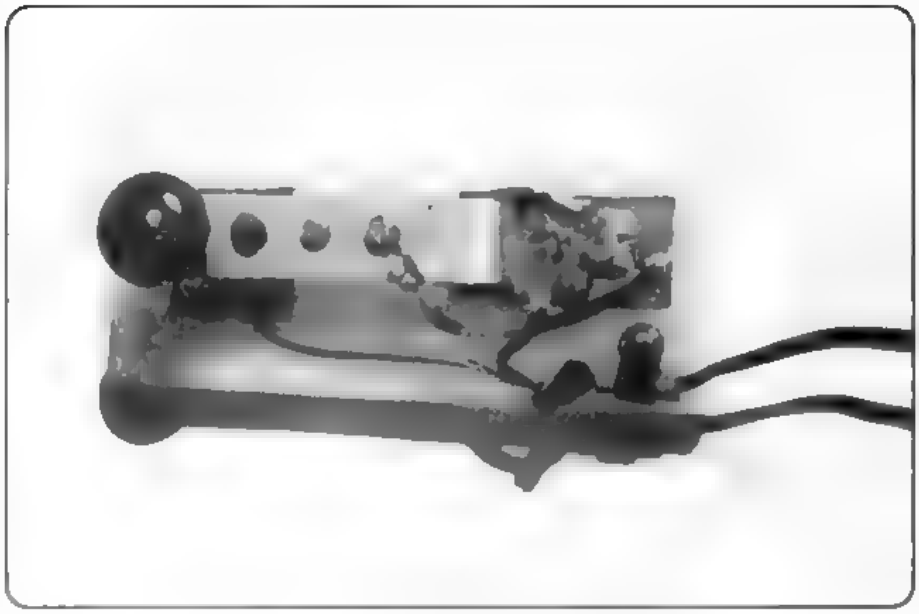


Photo Three: The completed key - top view

AR Club News

Urunga Radio Convention 2001 13 – 15 April

The next Urunga Radio Convention will be held over the Easter weekend of 13th ,14th and 15th of April.The convention is the first and longest running in Australia, so come along and join in the events and rag chew.

Special events are now available for the up and coming generation of Hams, with events on 3.5meg and 2 mtrs. Bring any surplus gear and sell or swap, no commission charged.

A programme of events will be published in February AR. together with a photograph of the gathering of participants at the 1950, ie second convention

Contestants in Pine Creek State Forest 1988. Ham on right of picture holding unit is John Meagher VK2AMW who is now silent key.

World War 2
Clandestine Communications
Part 1

by Malcolm R Haskard VK5BA

In recent years there has been renewed interest in World War II electronic equipment. Having a passion for both miniature electronics and HF communications it is not surprising that an area of particular interest to me is clandestine HF communications equipment. This three part article seeks to provide an overview of several WW2 organizations involved in secret operations and the HF communications equipment that they used. In doing so I hope that your interest and enthusiasm is stirred, ensuring that what equipment still remains will be valued, restored and preserved.

I would particularly like to thank those who have assisted me in this operation (providing me with photographs, allowing me to photograph their sets or loaning technical documents) including Tony Bell VK5UA, Rodney Champness VK3UG, Peter Holland, Mike Kelly VK3CZ, Colin MacKinnon VK2DYM, Neil Wain of the Royal Signals Museum, Simpsons Barracks and Bill Smith Editor of Radio Waves.

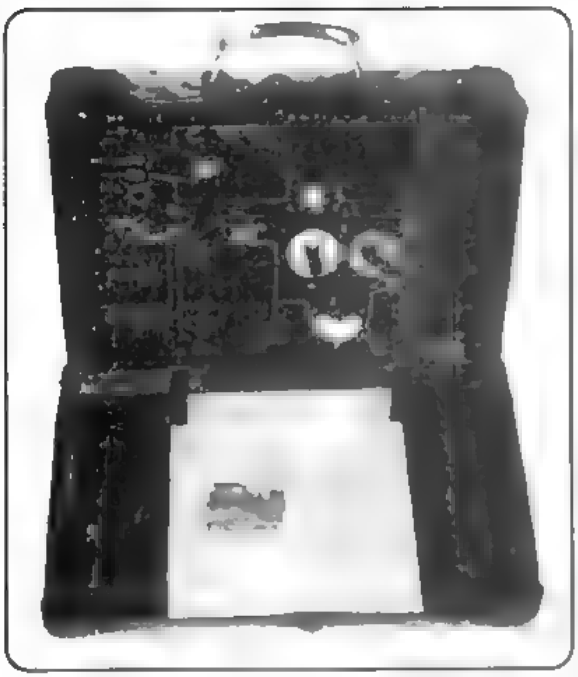
The Special Operations Executive

The decision to establish the Special Operations Executive (SOE), a small tough secret fighting service under the British Ministry of Economic Warfare was made in March 1939. Its purpose was to work with all forces of resistance, to sabotage and overthrow the Axis forces. Staff were either service personnel detached from regular units or specially commissioned personnel for these secret activities and their operations were given the classification, Most Secret. During the SOE initial days there was considerable in-fighting between the numerous secret services, which included the Special Intelligence Service, founded in 1909, and now known as MI6. Gradually SOE grew, establishing training centres and groups in various regions, code named Forces, examples being Force 101 in Ethiopia, 133 Egypt, 136 the Far East, 139 Poland and Czechoslovakia and 266 Yugoslavia and Albania

An important part of the clandestine operations was communications and a range of HF transceivers were developed, all using CW operation. The transmitters were crystal controlled while receivers could tune the lower half of the HF frequencies. Many, transmitters and receivers were integrated into one package, but later it was realised that separating into receiver, transmitter and power supply modules made things easier to transport and conceal. The receiver could be left in a more convenient and "permanent" location, separated from the frequently moved transmitter and its tell tale RF signal for Axis tracking stations to lock onto. Scheduled transmitting and reception times allowed time gaps for decoding/encoding messages and for operators to move between transmitter and receiver. The principle of operation was that each clandestine group was allocated one or more crystal frequencies and must report to the main SOE base in the area, the base maintaining a 24 hour per day monitoring service. No communication between individual clandestine groups was allowed. Unfortunately in the Far East region this often meant that intelligence gathered by one group reached another too late to be of use.

Force 136 had responsibility for a wide area, from India across to China The distance was such that a request was made to urgently set up a facility in Australia. It was initially opposed by the Australian Government and its armed services, but in March 1942 the Inter-Allied Services Department (IASD) was set up in South Yarra, Melbourne. The name then suggested for this new facility/organisation was Z Special Unit, its directive being to coordinate and administer groups whose activities ranged from sabotage to gathering of intelligence. In July of that same year the IASD and other Special Units came under the control of General McArthur and the Allied Intelligence Bureau was formed. The SOE used a whole range of code names to confuse and for Australian operations these included Force 137, the Services Reconnaissance Department, the Inter-Allied Services Department and Special Operations Australia Bases and training centres were established and included, Trinity Bay south of Cairns, Fraser Island, Garden Island, Wilson's Promontory and Darwin, the latter code named the Lugger Maintenance Section. HF listening posts were set up in Darwin and Melbourne.

Australian personnel who worked with the SOE were all volunteers. They participated in many British clandestine activities on the islands to our north and the communications equipment taken with them was that developed by the SOE for European operations Originally the heavy type B1 transceiver was used and this was quickly replaced by the now famous B2 set, or suitcase set (more commonly known in Australia as the Type 3 Mark II), developed by John Brown. These sets were not tropical proofed so almost daily had to be dried out in front of a fire to keep them operational. Carrying a small suitcase in a city appears normal, but in a jungle situation would raise suspicions The sealed metal case versions were therefore more appropriate for jungle



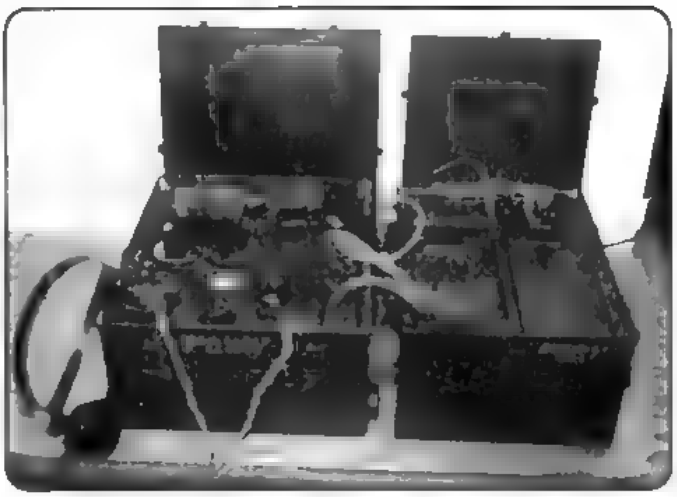


Figure 1a (left) and 1b (above)
The two versions of the Type 3 Mark II, suit case (a) and metal case (b). Only the metal case version is connected for operation.

work, particularly when the team and equipment was parachute dropped. Later sets employed were the compact Type A Mark III using American valve types (John Brown's design again) and the MCR 1 or "biscuit tin" receiving set. This set could be placed in an overcoat pocket, the dry battery pack in the other pocket, allowing the operator to listen to broadcasts while on the move. Most likely the MCR 1 was the type that Nancy Wake, the famous Australian resistance fighter in France, had as her personal receiver to obtain confirmation of drop sites via the BBC broadcasts.

Since mains power was not often available, battery operation was the norm. The SOE developed a number of generators to charge the 6 volt batteries. Petrol driven generators were heavy and noisy and fuel was not always handy. A steam driven generator was developed, as were pedal and hand generators, the latter although very portable were tiring to use.

The operations were classified Most Secret, so even today few have been written up, and unfortunately those that have, rarely give much attention to the communication equipment used. More often than not, it is passing references to difficulties of not getting through or the constant need to charge batteries. In spite of these problems the sets appear to have performed well, even in the tropics, conditions for which they were never designed

The SOE formally closed down on 15th January 1946.

Clandestine communication equipment

1. Type 3, Mark II Wireless Set

The set consisted of four modules, transmitter, receiver, power supply and spares box, the latter also containing the Morse key, headphones and aerial wire. All were painted in black wrinkle paint and the all up weight of the four modules unpacked was 13.5 kg. The modules came in either a small suite case, 18" x 12" x 6" (460mm x 305mm x 150mm) or two water tight metal cases labeled G, 12" x 10 1/2" x 6" (305mm x 270mm x 150mm), containing the transmitter and receiver and H, 12" x 9" x 6" (305mm x 230mm x 150mm), housing the power supply and spare parts box. Both configurations are shown in Figure 1. When the metal containers were used, also supplied were two 6 volt lead acid batteries in a watertight metal container, a 6 volt 30 watt hand generator with cables in a further sealed metal case and webbing carrying straps for all units. Crystals were supplied separately for they differed from mission to mission.

The CW transmitter, which could operate over the frequency range 3 to 16 MHz, consisted of an EL32 crystal oscillator, the crystal plugging into the front panel. Cathode and anode tuned circuits were switchable so that the oscillator could operate at the fundamental crystal frequency or a harmonic. To make tuning easier for the operator, both switches were labeled in MHz range. The oscillator output drove a 6L6G final power amplifier (PA) which had a single pi coupled output to match into the aerial. The tank circuit was external, plugging into the front panel. Physically four coils were supplied and by reversing the direction each was plugged into the panel socket, two different frequency ranges were available for each tank coil. In this way the frequency range 3 to 16 MHz was covered. Controls for the transmitter were the oscillator cathode switch called the crystal selector, the oscillator anode or waveband switch with tuning capacitor labeled PA grid tuning, the three PA pi impedance matching controls labeled anode tuning, aerial matching and tank coil plug, meter switch and control switch with the three positions tune/send/receive. In the tune position power to the PA is reduced and the aerial is disconnected so that no tell tale signals are unnecessarily transmitted. Power out is typically 20 watts on the crystal fundamental dropping to 15 watts if the output is on the crystal third harmonic.

The four valve receiver covers the same frequency range in three switched bands. The converter is a 7Q7 valve, 1st IF amplifier type 7R7, 2nd IF amplifier

and BFO a 7Q7 valve with the detector and audio amplifier a 7R7. The IF frequency is 470 kHz. Controls are minimal, wave change switch, main tuning having a 50:1 reduction drive, BFO control and volume The BFO control is a small capacitor which changes the frequency, oscillation ceasing when a depression on one of the rotating plates shorts the capacitor. The volume control simply changes the grid bias on the converter and 1st IF amplifier. The main tuning has a 0 to 180 dial scale so each receiver is supplied with calibration curves for the three bands. Receiver sensitivity is better than 3 micro volts for 10 mW output at 1kHz, with selectivity 3dB down at 1kHz and 20 dB at 9kHz.

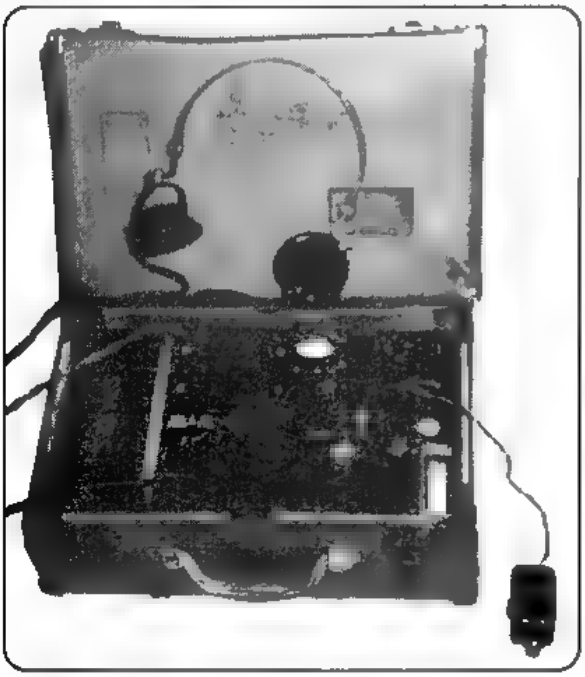
The power supply is general purpose accepting 6volts DC and a range of AC mains voltages, depending upon the settings of the mains/battery and voltage selector plugs.

2. Type A Mark III Wireless Set

This was the most compact transceiver produced, transmitter and receiver integrated into a single module with valve sharing. In the same unit was the AC mains supply, while the 6 volt battery vibrator supply was separately packaged. A spare parts box, the same size as the vibrator supply, included the Morse key, headphones and aerial wire. Total weight of the set was 7 3/4 kg, surprising light for a 1940s valve transceiver. The three metal cases, painted in black wrinkle paint, were like the Type 3 above, supplied in either a small case, 13 3/4" x 9" x 5" (350mm x 230mm x 125mm) or in two sealed metal boxes, the one marked C, 10 1/2" x 9" x 4 1/2" (270m x 230mm x 115mm), housing the transceiver proper and the one marked D, 9" x 6 3/4" x 5" (230mm x 170mm x 125mm), containing the vibrator power supply and spare parts box. In the suit case only the transceiver and one of the two other boxes could be accommodated, normally the spares box. The two package styles are shown in Figure 2.

The transmitter had two colour coded frequency bands, blue being 3.2 to 5.2 MHz and red 5.0 to 9.0 MHz. The Pierce crystal controlled oscillator valve was a 7H7 and it drove a 7C5 tetrode class C power amplifier/doubler. Power out at the crystal fundamental is 5 watts dropping to 4 watts when the final acts as a frequency doubler. The superheterodyne receiver likewise has matching blue and red bands. It consists of a 7Q7 valve pentagrid mixer / oscillator, 7H7 IF amplifier, 7H7 regenerative detector and the transmitter 7H7 oscillator valve also used as the receiver audio amplifier. The IF frequency is 1.215 MHz and at + and - 5 kHz bandwidth the signal is 20dB down. Receiver sensitivity is typically 3 micro volts for 1 milliwatt output into an 800 ohm load. Maximum audio output in the phones is 100 milliwatts. The in-built mains power supply accommodates 100 to 130 and 200 to 250 volt AC in 10 volt increments, the voltage selected by two screw in plugs. To minimise size and weight an auto transformer is used so the case is at neutral line potential. Controls for the transceiver are minimal Starting from the top left hand side, top row (Figure 2) AC voltage selector, meter, frequency check push switch, aerial matching; middle row being power change pull switch (AC to 6v DC), socket for DC supply, mains on/off switch, crystal socket, key socket, anode tuning, bottom row, reaction control with headphone plug below, wave change switch, neon power lamp with volume control below, receiver tuning. The latter has fine and course tuning, the scale divided into 100, so that a calibration curve is required for each band. With the frequency check switch the receiver is used as a wave meter (neon indicator) to ensure that the transmitter is tuned to the correct crystal output frequency (desired x1 or x2 and not x3).

The aerial wire supplied with the set was 60 feet in length while the earth wire was 10 feet. A screw driver, the Morse key and headphone ear pieces were included in the spares box, while the headphone head band sat on top of the transceiver. Spares included one of each valve type, 1 and 10 amp fuses, mains



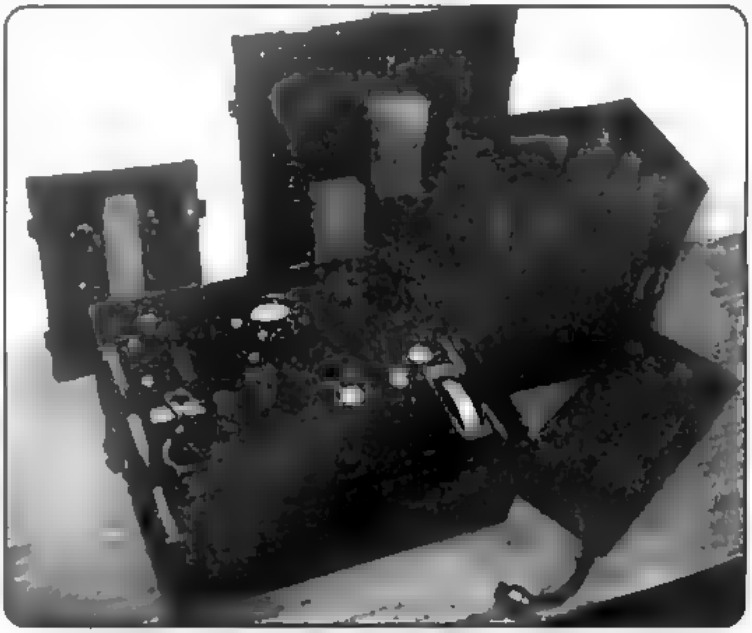
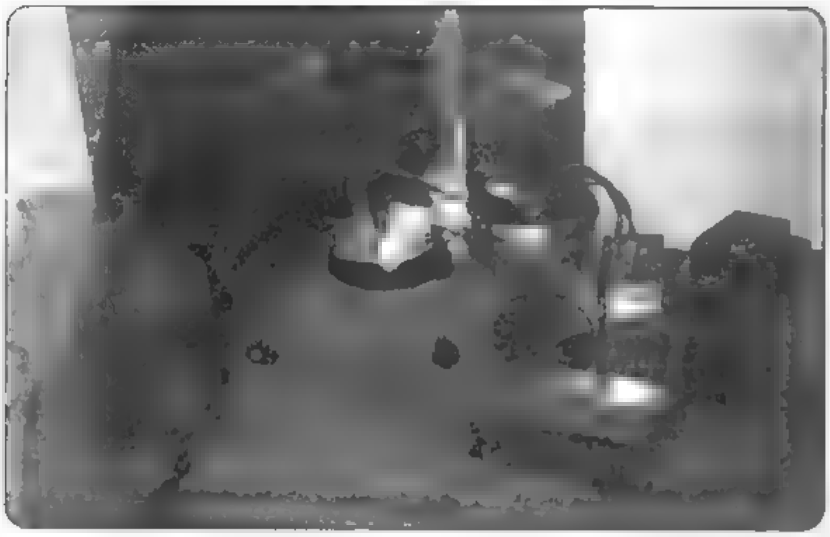


Figure 2a (left) and 2b (above)
The suit case version (a) and metal case version (b) of the Type A Mark III set. The suit case version is connected for operation.



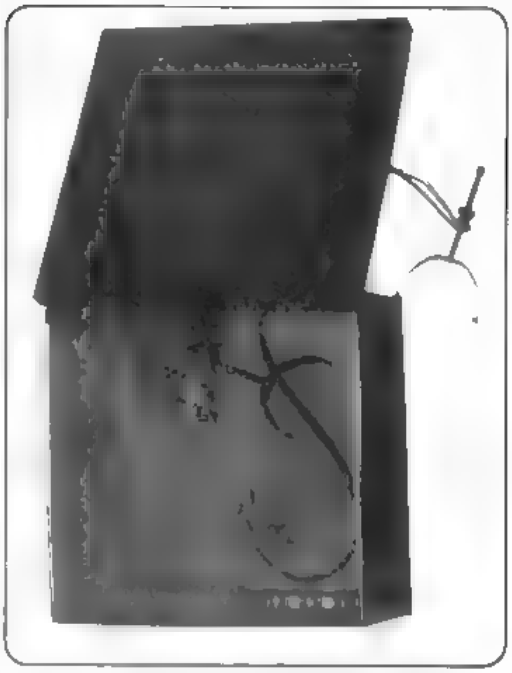


Figure 3a (above)) and 3b (right)
The MCR 1 receiver (a) came packed in a Huntley and Palmer biscuit tin (b). It allowed agents to listen to BBC and other broadcasts. At the end of WW2 some 1500 of these sets were dropped on prisoner of war camps to allow Australians to follow what was happening, a great morale booster.

adaptor pins, as well as battery clips.

3. Type MCR 1 Receiver

This small receiver (MCR standing for Miniature, but sometimes Midget Communications Receiver) was supplied to operators in a Huntley and Palmer biscuit tin, in the hopes that it might be over looked during searches. The receiver proper was housed in a gray painted metal case, 7.5" x 3.25" x 2.25" (190 x 83 x 58 mm) and had four simple controls; main tuning, reaction, sensitivity or volume and aerial trimmer. Four bands were available, selected by plugging in the appropriate coil box onto the end of the receiver. The main tuning scale was 0 to 100, however each coil box had its own etched brass conversion scale allowing the receiver to be approximately tuned to the in coming signal. The four bands were; Range 1 - 100 to 1600 kHz, Range 2 - 2.5 to 5.0 MHz, Range 3 - 4.5 to 8.0MHz, Range 4 - 8.0 to 15.0 MHz. Miniature glass 7 pin valves were used, a 1R5 for the mixer and four 1T4 valves for the local oscillator, IF amplifier, regenerative detector and audio output. The IF frequency was 1730 kHz. Sensitivity and selectivity figures are not given in the handbook.

A matching mains power supply was also included in the biscuit tin. Physically the same size as the receiver, and painted gray, one end contained a voltage selection panel so that by inserting a screw in plug into the correct hole mains input voltages from 100 to 250 volt, either AC or DC, could be accommodated. Again to minimise size and weight an auto transformer was used for AC voltages while series dropping resistors were used for DC main supplies. A dry battery pack was also available.

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Pactor Bulletin Board Service — *A Voice for the Far Outback*

by Rob Gurr, VK5RG

Communicating from the far reaches of the outback can be difficult.

PACTOR BBS, courtesy of AHARS, addresses the problem

The Adelaide Hills Amateur Radio Society (AHARS) meets monthly at Blackwood in the Adelaide Hills. The Society membership at July 2000 was over 100. For many years AHARS has made monetary donations to other Radio Clubs in South Australia, to assist in the installation and upgrade of their voice and packet repeaters. Over $1,000.00 has been donated to the South Australian Amateur Radio community. In addition to a technical lecture programme and two social dinners, AHARS convenes a major amateur and electronics equipment sale each year at the Westbourne Park Community Centre.

IN 1997, a group of AHARS members suggested that the Society establish its own repeater for general use. Following discussions with other groups, it was decided to establish a PACTOR BBS, which could be used by Amateurs throughout Australia for interconnection to the AX25 Packet Radio Network. At the time, PACTOR forwarding and mail box facilities were available from only a few dedicated private operators, with no institutional (Radio Club) support for this activity. Meetings between a number of Packet Gateway operators and the Society revealed great support for a dedicated High Frequency BBS. It was considered that with Internet backup, the existing gateway and forwarding facilities were quite adequate for all current requirements.

The initial aim was to provide a facility for outback travellers and Australian stations, out of reach of the VHF/UHF AX25 network, with particular attention to Intermediate Class Licensees. With the opening of further High Frequency bands to this group of Amateurs, this parameter has been reconsidered, and the system is now available to all Australian amateurs on the main High Frequency bands.

A sub-Committee

An initial approach to the Committee of AHARS resulted in formal approval being given for a major BBS facility to be constructed. A sub-committee was established to oversee the project. A number of meetings, with guests from associated groups such as the South Australian Packet Users' Group (SAPUG), Packet forwarding operators, BBS SYSOPs, etc. was held over the next two years.

Operating Mode

Why use PACTOR?

Of the operating modes available, the chosen mode would be that with the maximum speed and the minimum cost. We have advanced well beyond morse code for digital communications. Radio Teletype is subject to selective fading and with no error correction, it was not favoured. The first error correction mode for HF was AMTOR (a derivation of the Commercially used SITOR), which was very advanced in early days, as an extension of the Baudot Code, with mail-box facilities, error correction (ARQ). This mode has no facilities for the transmission and reception of anything but plain text and numerals.

The next choice following this was PACTOR, which has 200 baud capabilities, ARQ, and forward error correction (FEC). It also has the facility for text and data file transfers, similar to that of Packet. Although the speed of 200 bauds is adequate, a number of manufacturers have developed "Company Specific" modes such as G-TOR, PACTOR II and CLOVER, which are capable of higher speeds. These modes require more expensive equipment, and there is no software available with these advanced modes, to enable the use of simple modems.

PACTOR modems are available from several suppliers, and usually include 1200 baud Packet plus a few other options. The price is reasonable.

There is also, however, software available which can be used with a simple modem, similar to those used some years ago for RTTY. Remember the "clank " of the Creed 7B, Teletype Corp. Model 15, 19 etc., and the Seimens Model 100? If readers wish to try PACTOR using the earlier modems such as the ETI730, ST5, ST6 and DT600, the step to PACTOR, is as simple as installing a programme called "Terman93" by HB9JNX (from his home page on the Internet) or "BMKMULTY" from G4BMK, and modifying the PTT, receive data and transmit data circuits.

Unattended Operation

This aspect was very important. The establishment of such a station, at an existing licensee's residence, precludes the use of any other High Frequency receiving or transmitting equipment at that location. Both the host licensee's equipment and the BBS will at some time clash in normal operation, with possible damage to equipment. Such

conflict could be tolerated in the development of the BBS. However, the permanent location at a member's home seemed most unlikely. A further parameter here is to have a UHF path to the AX25 network.

The initial solution to this aspect of our planning was simple. The Society agreed to fund, develop and service the equipment and then donate it to the South Australian Packet Users' Group (SAPUG) for installation alongside the AX25 Packet and Rose network equipment. This would be at the "Burley Griffin Building", co-sited with the Wireless Institute of Australia, SA and NT Division, (WIA), VK5WI. The plans of all three organisations were disrupted in 1998, when the Thebarton Council, amalgamated with the West Torrens Council, and sold the building. SAPUG moved to new premises, where there is restricted space for their equipment, and the WIA fragmented its facilities to other Radio Clubs. AHARS is examining options for an alternate site, following the successful completion of the project. Presently it remains situated at the writer's home, in the south-eastern suburbs of Adelaide

The BBS operates on PACTOR under the AHARS callsign (VK5BAR); Morse code identification has been included in the close down message to indicate the exact location of the equipment, with the call sign of the host licensee.

Equipment For The BBS

Initial estimates included the need for the items listed below. A fund raising activity was established, with the early donation by member Graham VK5GH of a modified Philips FM92 144MHz transceiver, which was raffled with many ticket books thrust into unwary faces at conventions, club meetings, etc.

Another, and ongoing, source was the donation of various unwanted items by Society members at general meetings. AHARS runs a large Garage sale for the general public each year, and a private sale night for members only. On normal meeting nights, members are encouraged to place surplus items on a rear bench. Buyers donate whatever their conscience suggests to the Society's Treasurer. In this way, members have shown continuing support for the project

The following is a list, and the source, of the equipment in use

Item	*Source*
ICOM IC737A Multiband High Frequency Transceiver	*Purchased by the Society*
12 Volt 20 Amp Power Supply	*Donated by member J Tregallas (VK5XJT)*
"Coman" Multiband Vertical, High Frequency Antenna	*Purchased by the Society*
KAM Plus Packet/PACTOR Modem	*Purchased by the Society*
UHF 440MHz Transceiver	*Loaned by SAPUG*
UHF Antenna	*Donated by Amateur Radio Experimenter's Group (AREG)*
12 Volt 10 AMP Power Supply	*Donated by member J Tregallas (VK5XJT)*
TNC for Packet links	*Purchased by the Society*
ICOM CT17-V Level converter	*Purchased by the Society*
Scanning hardware	*Donated by member Rob Gurr (VK5RG)*
Computer, AT486 DX2-66	*Purchased by the Society*
Mobile equipment trolly	*Loaned by member Rob Gurr (VK5RG)*
Various sundry items	*Manufactured and donated by Society members and friends*
Software (MSYS)	*Installed and manipulated by Colin McCarthy (VK5EB) and Joseph Kasser (VK5WU ex G3ZCZ)*

The equipment has been assembled on a mobile equipment trolley, for ease of access during construction. It operates on 240 Volt 50Hz AC power. No provision has been made for operation during power failure. The purchase of a "Lap-top" computer, and substantial battery supply with charger, is considered unnecessary at this stage.

The antennas are mounted on TV antenna brackets clamped to the square tube verticals of a carport. Removal to another location would not be difficult.

Handbooks, circuit modifications, backup software, are stored in drawers at the bottom of the trolley.

Modem Choice for the BBS

There was little choice. The programme required the use of a Kantronics KAM Plus modem, and one was purchased from Kevin Cavanaugh, (VK4SP), who understood what we were setting up

The 1200 baud UHF link to VK5SPG was catered for with an MFJ1270B (TNC-2) purchased from SAPUG

Both units have performed well in the project, however the KAM+ was difficult to set up, and recent power surges have caused some intermittent operation. The BBS presently survives on a borrowed KAM+, while the problem with the Society's modem is assessed.

Modem Choice (including Home Construction) for users.

When a potential user considers purchasing a Modem for use on PACTOR, a number of choices are evident.

Some modems (frequently called Multymode TNCs and other vaguely related names) are fitted for PACTOR only, while others give all H/F modes, including CW, RTTY, AMTOR, G-TOR, and Packet (VHF and HF). Most are expensive, but it is worth paying the high price if continuous operation on these specialised modes is intended.

For technical enthusiasts, a home brew modem, suitable for use with software available on the Internet, is a practical option. Suitable Printed Circuit Boards and construction information is available within Australia. In the October and November 1999 issues of QST, a comprehensive article covered this very suitable alternative. Modems used by RTTY enthusiasts in the 1960s to 1980s may also be modified to operate on PACTOR, with these programmes. The main consideration is the widening of the lowpass filters, location of a suitable point for RS-232 take off and the realignment for the appropriate Mark and Space tones. Cost savings may be considerable, depending on which approach is used.

Modems known to be easily modified for use with TERMAN93 (or "BMKMULTY", another suitable software package from G4BMK), include the following:

ST5	DT600
ST6	ETI 730
AEA CP-1	AEA MP-64
AN-93	

Home constructed and commercial Modems using PLL XR2211/XR2206 combinations have also been used successfully

Some limited success using the World Chip Modem (AM7910), has been reported by associates. However internal timing properties appear to limit its usefulness in this application.

In 1997 Johnny Melvin, (G3LIV) introduced me to his "P-Par" modem, mentioned in the UK Amateur Press. His assistance led me and Norm Rosenzweig (VK5ZAH) to develop a printed circuit board for a dedicated RTTY/PACTOR modem, using parts which are readily available from suppliers in Adelaide. A useful feature of this modem is the use of strip LED indicators to facilitate tuning the incoming signal. Norm is able to manufacture the board on direct order. (see his web-site, listed below).

System Considerations.

The overall system was designed to give a connecting operator the impression he was connected to a "standard" Australian packet network BBS. The programme used in a number of BBSs is by F6FBB, under a variety of operating systems including LYNUX, Windows or DOS. The choice of software for the VK5BAR BBS was limited, with a programme "MSYS' developed by Michael Pechura, (WA8BXN) chosen. This allowed the connecting station access to a significant number of bulletins, and an ability to send and receive messages, when connected on HF. Additionally by using a "NODE" available on the programme, a further connection to the AX25 network, via a 440 MHz link, gave access to the BBS controlled by SAPUG. This meant that the field operator, using a laptop computer, sitting under a gum tree away from any other BBS, could be looking at the same screen as a VHF operator in Adelaide, if connected to the same BBS on 144MHz. From that point on, access to the total network, including the "Wormhole", the Internet through "NETlink" stations and the DX Cluster, etc., would be possible. This depends on the number of users and the reliability of the HF path.

Software Limitations

Although the sub-committee had spoken to some Australian licensees with success with MSYS, few, if any seemed to have utilised the "Scanning" properties of the programme. This was desired to ensure coverage of the vast continent, day and night, summer and winter, without the presence of an operator at VK5BAR. The few experienced with MSYS in HF BBSs , appeared to have used dual stations and PCs, when operation on more than one band was desired. We also found that whilst MSYS was designed for scanning on a Kenwood transceiver, and the Documentation indicated success with ICOM and Kenwood equipment, we encountered some time consuming difficulties. We finally combined software with a little hardware, to overcome this problem. The system now continually scans four frequencies, one in each of four bands, remaining on each frequency for 5 seconds.

It was necessary to modify the scanning sub-routine, (encouraged by the author in the MSYS documentation) for use with our ICOM 737-A transceiver. Joseph Kasser (ex G3ZCZ now VK5WU), author of many other software programmes, and Colin McCarthy (VK5EB), kindly spent many hours assisting with the development. A suitable piece of hardware, including a small scan timing unit, so necessary to this aspect of the project, was constructed.

This was necessary, due to the failure of the programme to recommence scanning after the completion of a QSO. The construction of a simple timer, to break the scan control line, and restore it some 10 seconds after the last PTT operation, was required. Although needing only a few components, this unit caused me more consternation, and wasted more time, than some of the main assembly. A "dead bug" construction on a piece of PCB worked well. However, when correctly and neatly constructed, it failed to work. A second and final attempt proved too much for me! If the unit had contained many stages, a logical approach would have located the source. However, as it was simply a combination of two 25 pin DIN connectors, a relay, a couple of diodes, and a 30,000 uF capacitor ..?

At this stage I decided to write this article.

Equipment Problems.

There were some problems. Those encountered were mainly in such items as cable connectors, position and tuning of the multiband antenna, etc. Interconnection of audio lines using 3.5mm plugs and sockets proved unreliable and these were changed to RCA line plugs and sockets.

The two multiband vertical antennas donated to the project were both without 80Metre resonators. These were unobtainable. A "Werner-Wulfe" vertical antenna was purchased to solve this problem. This antenna operates on the 5 main bands, and is adjusted for best SWR on the frequencies used by the BBS.

Location of the equipment in my home workshop, where I am constantly constructing, testing and operating other radio equipment, was a disaster during this stage. My 400Watts transmissions on 80 Metres one night, did some front end damage to the ICOM 737A. We opted to freight it to Melbourne for service, from where it was reported "no fault". On return, it performed well for a day or two, then failed again, even without being subject to excessive overload. This time we serviced the ICOM ourselves...a faulty switching diode in the front end had failed.

The ICOM 737A transceiver scans continuously, stopping on each of four frequencies for 5 seconds before moving on to the next. This causes a continuous selection of bands, and the operation of relays and the tuning motor. Although little information is available to predict the life of these components operation so far has been quite reliable.

This all proved that an isolated location was necessary. Shortly after these adventures, I sought support from AHARS to move the system to another location

Radio Frequency Interference

When the system was first operating, it crashed many times, due to the Transmitter RF getting into the Computer, through all leads. The problem showed up as uninvited ASCII characters appearing on the Menu screen of the programme, when the BBS transmitter was operating

The filtering required was quite conventional, using ferrite toroids, obtained from salvaged computers, power supplies and printers. The power leads were twisted through ferrite cores from Television tube "yokes". Data leads to all ports were wound around ferrite rings recovered from old computers, and "clamp on" ferrites used when available. Audio leads into each item were also fitted with toroids. Generally 6 to 10 turns around these toroids, was adequate.

As the system is mounted on a mobile

equipment trolley, little effort was made to earth the unit, other than by the AC Mains, GPO earth. Fitting of a mains line filter, or the main power lead wound around an old TV yoke, may be necessary if further interference is experienced at another site.

Computer Considerations

An AT486 DX2-66 with 100MB hard drive, 1 2 and 1 4MB floppies, an SVGA monitor, and operating under DOS, was considered adequate. The use of four ports was demanded by the programme, if we wanted to use a Mouse Suitable software for analysis and backup of programmes, files, etc. was also included.

Operating Frequencies

Our original intention was to serve all licensees who were authorised to use PACTOR. This meant using frequencies allocated to Intermediate Class licensees and consequently the early access to the BBS was restricted to the 3.5, 21 and 28MHz bands. With the recent authorisation of these licensees to also use other bands, the final setup is for scanning on 3.5, 7, 14, 21 and 28MHz bands.

The scanning routine allows listening for PACTOR calls to VK5BAR for 5 seconds on each frequency, before scanning to the next, etc. Thus a caller may have to wait up to approximately 20 seconds for a response, depending on the band chosen for the call. Once the call is detected, the transceiver "locks" on to the frequency, and following the completion of the "QSO", recommences the scan. It is therefore likely that a caller on one frequency may have an indeterminate period of waiting, if the BBS is being used by another station on another frequency. Other private HF BBSs have solved this problem by using two or more complete installations on separate frequencies. We considered the above approach to be adequate for the present system

All frequencies used have been in the "FSK" sections, as published in the WIA Band Plans. Regrettably we suffer some interference from voice stations, particularly on the 3 5MHz band, with most stations moving away when they become aware of the purpose of the installation There continues to be some rejection of digital techniques, and it reminds me of the difficulties we had when experimenting with SSB transmissions in the 1950s, before the usefulness of that mode, to amateurs generally, became evident.

Transmissions are SSB (Lower Sideband) with a Mark tone of 2095Hz. Frequencies in use at present, are :

3632kHz	7035kHz
14080kHz	21075kHz
28075kHz	

i.e. on MARK frequencies of 3629.905, 7032.905, 14077.905, 21.072.905, and 28072.9 kHz.

It is not proposed at this stage to include 10, 18 or 24MHz in the group, but this can be arranged if there is any such demand.

Using the System

A station set up for PACTOR operation should set its transceiver to LSB on a VK5BAR frequency. A command, "C-VK5BAR" (or whatever your programme requires), should be sent. After a few calling cycles, VK5BAR will respond, in PACTOR, with a connect message, addressed to the calling station. Answer the prompts only, and do not 'turn' the transmission around, but follow the instructions sent to you by the BBS. A set of instructions on all the commands is available by typing "?" at the long line of prompts.

VK5BAR has Bulletins under a number of titles, and 100 in total, which may be read. Additionally you may send a message to another station, in a similar manner to a VHF etc., BBS But as there is no "Telephone Book" held on VK5BAR, it is necessary to use the full hierarchical address. This takes the usual form, e.g. VK7DSB @ VK5SPG. #ADL.#AUS.OC.

The most useful facility is the ability to connect direct to VK5SPG and the AX25 network direct (including the Rose Network and the Wormhole), through a NODE command. VK5BAR during its "welcome" screen, mentions this, but at the end of the long Command line, a user should type in BLOCK letters "NODE".

On receipt of this, VK5BAR will send a "NODE" message, and a short command line. At this point type "C1 VK5SPG" and a direct link to VK5SPG will be established. The screen facing the user now is the same as that facing a person connecting to VK5SPG on VHF or UHF.

From this point on, the normal BBS functions are available.

On sending a "B" or good "Bye" command, after use of VK5SPG, the connection will be cut VK5BAR. There is no provision for return to VK5BAR from VK5SPG, except by disconnection, and to again call VK5BAR on HF.

The following is a sample of the connect text and operating lines:

(Italicised words are from the calling station)

C VK5BAR
[MSYS-1.20beta4-MHI$]
Hello Rob, Welcome to VK5BAR's MSYS BBS in Adelaide, SA
To connect to VK5SPG or VK5SPG-2 netrom node,
type NODE (in uppercase) then...
C1 VK5SPG or C1 VK5SPG-2
Msgs to the following catagories ('TO' fields) are present:
50MHZ AFARN APRSWX ATV BBS CARS CONTST DEFENC EVENT JOURNA KWOOD MANUAL NEWS OC PACKET SPACE TECH THANKS TST UIVIEW VHF WIA WICEN
To read the messages in a category, use R category
To list the messages in a category, use L category
VK5RG DE VK5BAR
Enter command:
A,B,C,D,G,H,I,J,K,L,M,N,P,R,S,T,U,V,W,X,Y,?,* >
NODE
MSYS K Node in Adelaide, SA. [BBS at VK5BAR]
CONNECTED TO NODE VK5BAR-7(VK5BAR)
Enter command: B,C,H,J,N?
C1 VK5SPG
Attempting to connect to VK5SPG
using Port 1 (UHF)
###LINK MADE
[FBB-7.00g-AB1FHMR$]

continued next page

```
Hello Rob, Welcome to VK5SPG - Adelaide Central LAN BBS (439.050)
Your home BBS is registered as VK5SPG.#ADL.#SA.AUS.OC.
New Messages 185817 - 211283, There are 829 active.
Type ? <return> for help.
Mailbox Menu
B: Bye              C: Conference     D: DOS Area       F: Facilities
K: Kill Mail        L: List Mail      O: Options        R: Read Mail
S: Send Mail        TH: News-Groups   !: System Info    ?: Help
VK5SPG BBS 31>
LL 5
*** : TO Field Filter is set to:- [ * ]
Msg #  Origin  TSD  Size  To      Route   From              - Title -
211283 02-Jul  B$   2031  FACTS   @WW     VK3LCW STRZELECKI
211282 02-Jul  B$   1803  FACTS   @WW     VK3LCW GOULD
211281 02-Jul  B$D  2093  STEAM   @WW     M1ACA 7+ BRINORTH.JPG 8/8
211280 02-Jul  B$   2254  ATV     @VKNET  ZL1ABS AK ATV
                                          proposed STSP Repeater
211279 02-Jul  B$   1626  ATV     @VKNET  ZL1ABS AK ATV email list
Mailbox Menu
B: Bye              C: Conference     D: DOS Area       F: Facilities
K: Kill Mail        L: List Mail      O: Options        R: Read Mail
S: Send Mail        TH: News-Groups   !: System Info    ?: Help
VK5SPG BBS 31>
B
Connected time: 1mn 20s - Bye Rob, Thanks for using VK5SPG BBS
```

What we would do next time!

The project was conceived at the time when PACTOR was overtaking AMTOR for use by High Frequency BBSs. Development of HF digital techniques (with error correction) has been rapid over the last few years, with Clover, G-Tor, and PACTOR II, evolving as significant and faster modes. The construction of Modems for these is not within the ability of "Home Brewers". Consequently, a user would need to spend a lot of money to use these modes. Another problem is that they are "company specific", which means that they may be used only for contacts with stations using the same brand of Modem. PACTOR was included in the hardware from a number of manufacturers, and as mentioned above, software for home construction was available.

The recent higher speed system, developed by the "inventors" of PACTOR, (SCS) has been PACTORII. The modems for this mode operate on the earlier PACTOR as well as PACTORII. The cost of importing one of these modems, plus the purchase of transceivers, Packet Modem, computer, etc. for the project, was questionable, and out of our reach financially.

The SCS Group have now developed a new Modem, PACTORII-e, which has adequate features to establish a BBS, using one of these units in conjunction with a computer. Presently a number of privately used "HF Gateways" are operating using these items. The cost is comparable with that expended on modems and software for this project.

It is possible, subject to the success of the present BBS, that AHARS may consider upgrading this area of the BBS, providing suitable funds are available.

Thanks to:

- AHARS Committee who have supported the project, following the enthusiastic approach of the sub-Committee.
- sub-Committee members, VK5EB, VK5NU, VK5XJT, VK5GMH , VK5RG
- SAPUG support via VK5ZAR
- Potential users VK5KDC, VK5KJJ, VK5AFO, VK5GH, VK5AKE
- Test stations, VK5EV, VK5AFO, VK5EB, VK5RV, VK5ZD
- Software assistance VK5WU, VK5EB, VK5XKN
- SYSOP, VK5EB
- Significant donations, VK5GH, VK5XJT, VK5TY
- Gateway operators who gave encouragement VK5UJ, VK5HB, VK5ATB
- AHARS members and friends who helped the fundraising projects.
- My very lovely wife, Carlein, for her continuing support, and hospitality to all the many visitors.

Documentation

During the construction, extensive effort was spent on ensuring that the documentation was kept up to date. Should it be necessary to hand the management of the project on to another group, little instruction for its maintenance and operation would be required.

It is difficult to imagine how much we rely on photocopier machines to help us assemble such service and installation information!

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Technical Abstracts

[redacted] VK1AU
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Simple Regen Radio

A simple regen radio appeared in QST September 2000 designed by Charles Kitchin N1TEV. The design is for a simple one band design using a handwound coil which should be simple to build. In the USA a printed circuit board is available but ugly construction using point to point wiring with components above a PCB laminate base board should work

The circuit is shown in Fig 1. The components are standard types and should be easy to find. The Coil is wound on a 35 mm film container or alternatively on a pill container of 25 mm diameter or thereabouts. The coil consists of 13 turns of 22 gauge insulated solid core hook up wire with a tap as shown in Fig 1.

Tuning is accomplished with a variable capacitor of 150 pF or 365 pf as used in many radios. This should be an air dielectric type. These are widely available and are often seen at hamfests. A slow motion or vernier dial would be advantageous. A fine tune facility is shown in Fig 1. in the box in the bottom left hand corner. C15 should be a mica capacitor for this facility. This would help with tuning stations.

An unusual circuit detail is the floating detector made up of C4 and D1 This uses the leakage, or low back resistance, of the 1N34 Germanium diode as the return dc path for the detector.

The receiver should cover 40 metres and some international broadcast bands It should not be hard to find signals.For AM reception operate just below oscillation. For CW and SSB the regen control should be advanced to allow Q1 to just oscillate. A little practice will soon allow you to find the optimum point.

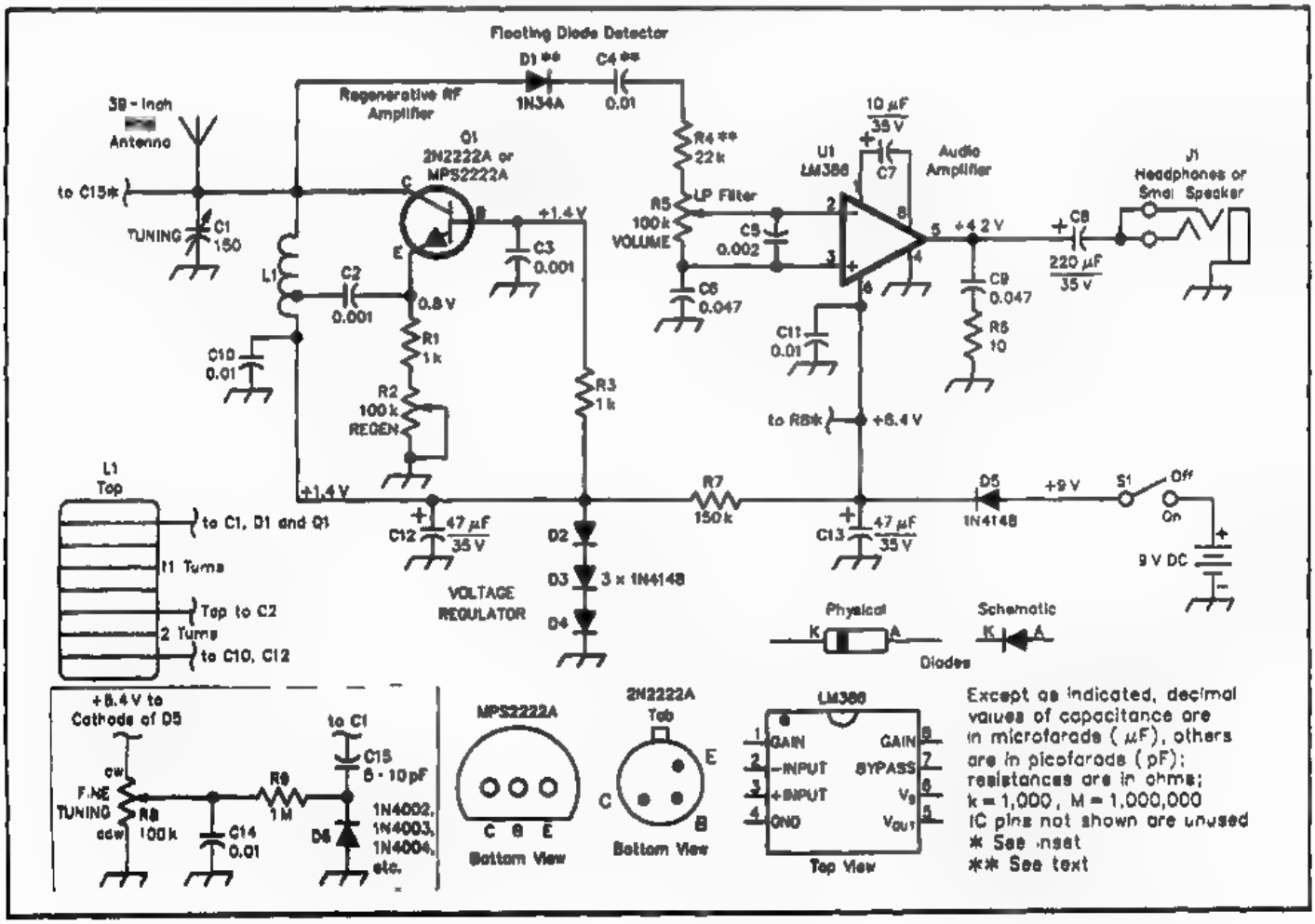


Fig 1. Simple Regenerative Receiver.

DOX Control of Yaesu FT847

An interesting circuit appeared in the Hints and Kinks column of Bob Schetgen KU7G in QST September 2000. The circuit allows data operated control, DOX, of an FT847 for use with PSK31 . The circuit comes from David Smoler AD6KI.

David did not want to tie up a serial port just to drive the transceiver PTT line when operating PSK31. He built up a circuit to interface the sound card in the computer to the Data I/O jack of his FT847. He noticed that the FT847 could be keyed by pulling the data line low with a 22K or lower value resistor. This also disabled the Microphone which was convenient for data operation.

The circuit he built up is shown in Fig 2. He built it into a small metal box. The leads on the PC side are shielded but are only grounded at the PC end. The lead to the transceiver is also shielded but is connected to the case at both the interface and transceiver ends. This important to avoid hum loops. In QST Nov 2000 David noted that the connections shown on J3 in Fig 2 are reversed. You should check this and refer to the FT847 handbook when wiring the connection

The transformers used in the circuit were obtained from Radio Shack in the USA and may be available locally from Tandy. Alternatively Altronics, DSE, or Jaycar have suitable transformers in their catalogs.

The FET used is a small TO92 case MOSFET. It is listed in the Altronics catalogue and other suppliers have similar devices.

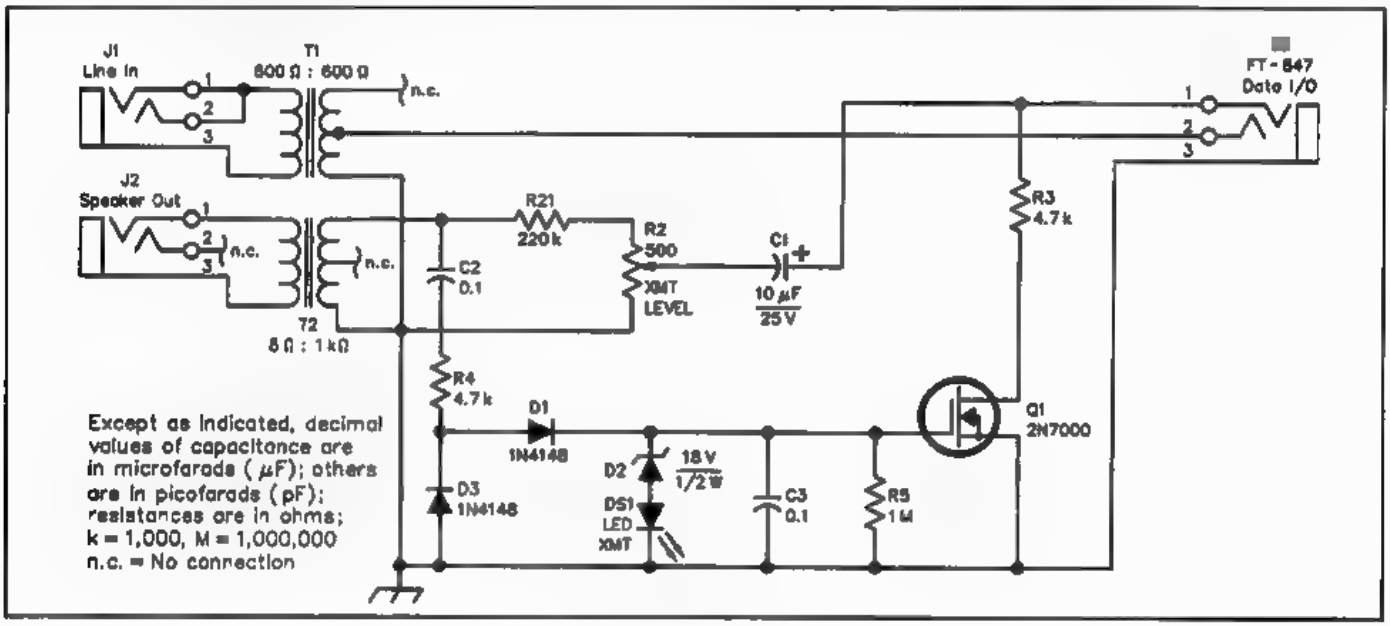


Fig 2. DOX Interface for FT847.

Simple Morse Practice Generator

A simple morse practice generator appeared in the Technical Topics column of Pat Hawker G3VA in the September 2000 Issue of Rad Com. The item originally appeared in Funk Amateur July 2000.

The design is shown in Fig 3. The circuit provides a tone between 450 Hz and 3 kHz as set by R4. A simple shaping circuit is incorporated to improve the keying characteristics. The IC used is the 4093 which is a common CMOS type containing four schmidt NAND gates.

Current drain should be light and a small 9 Volt battery should last a long time.

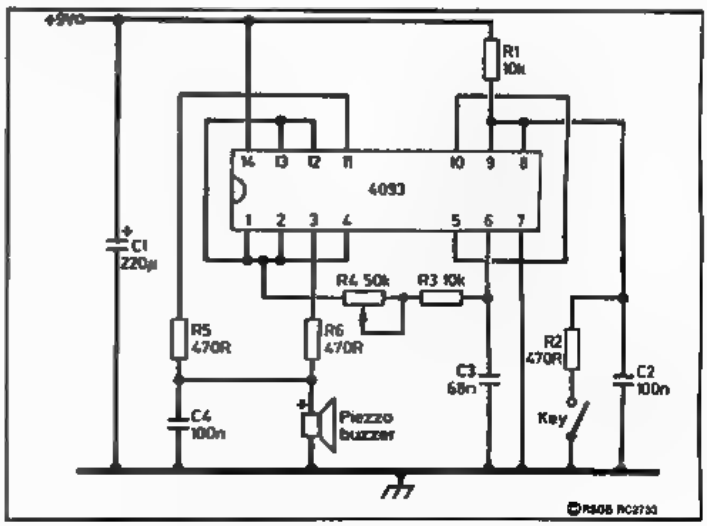


Fig 3. Simple Morse Practice Generator.

DON'T MISS THE ACTION!

Uniden 248CLT Desktop Scanner

Uniden's latest desktop scanner, the new 248CLT not only provides coverage of the VHF and UHF bands, but also covers the local AM and FM broadcast bands! Fully programmable, the 248CLT features a full frequency backlit LCD screen, 50 memory channels, an Alarm Clock function, Scan and Search operation, plus battery-free EEPROM memory backup. Covers 66-88, 137-174, and 406-512MHz, plus 520-1629kHz and 87.5-108MHz broadcast bands. Includes AC adaptor, telescopic VHF/UHF antenna, and detailed instructions. A separate antenna socket is also provided for connection of an external AM broadcast band antenna.

D 2747

$199

Uniden

Sangean ATS-505 Shortwave Receiver

Sangean's latest digital tune model provides coverage of local AM/FM stations, Longwave and Shortwave signals, plus provides SSB tuning for coverage of Ham, commercial and marine signals. Includes 45 memories for easy recall of your favourite stations, and a large backlit LCD screen. Requires 4 x "AA" batteries.

Features:

AM: 522-1710kHz FM: 87.5-108MHz, LW: 153-279kHz SW: 1.711-29.999MHz • Keypad frequency entry, auto-scanning, and manual tuning • Dual time settings • DX/local sensitivity switch • External shortwave antenna socket • Tuning steps: 1kHz/5kHz on SW, 1kHz/9kHz on AM, 50kHz/100kHz on FM • Variable BFO control for SSB reception • 14 SW band divisions • Complete with stereo earphones and carry case.

D 2807

SANGEAN

SAVE $28

$199

Yaesu VR-500 Multi-mode Scanner

The new VR-500 is more than just a scanning receiver, it's more like a miniature high performance monitoring station! Providing almost continuous coverage of the 100kHz to 1300MHz range, the VR-500 includes reception of narrowband FM, wideband FM (for FM and TV broadcast audio) SSB (for Amateur, CB, and HF reception), CW and AM (for shortwave and broadcast station) signals. A large backlit LCD screen not only displays the receiver operating frequency, but also displays channel steps and reception mode. For monitoring band activity above and below your current listening frequency, the VR-500 even provides a 60 channel Bandscope to display local activity (within a range of 6MHz max when used with 100kHz steps). A total of 1091 memory channels are provided, with 1000 of these being "regular" memories with alpha-numeric tagging, and the balance being for special features (such as Search band memories, Preset channel memories, Dual Watch memories, and a Priority memory channel). A Smart Search™ function, which sweeps a band and finds in-use channels, allows you to allocate up to 41 memories that can automatically note these active frequencies. The VR-500 operates from just 2 x "AA" size alkaline batteries, and can be connected to an external 12V DC source (such as a vehicle cigarette lighter) using the optional E-DC-5 adaptor. For easier operation, the VR-500 can also be connected to your PC using the optional ADMS-3 interface/software package.

D 2799

YAESU

$699

PowerHouse stores

A shopping experience like no other!

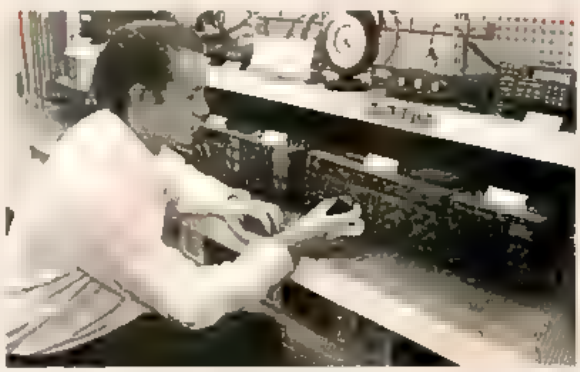
Dick Smith PowerHouse stores not only offer an expanded range of those original electronics products that have made our stores famous, but now you can experience the fun of using a wide range of communication equipment in our hands-on demonstration area.

Called the "Ham Shack", each PowerHouse store has a dedicated area where licensed staff can show you the latest Yaesu, Uniden, or Magellan communications and GPS products, as well as an expanded range of accessory lines that may not be available in other stores.

Not involved in Ham Radio? Staff can also advise on the installation of a CB radio for your four-wheel drive vehicle, how to get involved in listening to Shortwave radio stations from around the world, or assist you in the selection of a suitable accessory for an existing piece of equipment. For bushwalking or boating users, you can also find out about the latest in inexpensive satellite based navigation receivers or emergency beacons, or just browse through an extensive selection of communications related books.

The PowerHouse is also the place to go if you simply need a component to finish that weekend project, to buy tools, or just to while away a few hours while checking out our in-store technical books, library CD-ROMs, or our dedicated customer use Internet terminals.

With over 20,000 product lines in the electrical, computer, and communications areas, our new PowerHouse stores get the wavelength right!



2096 DPS 50/00

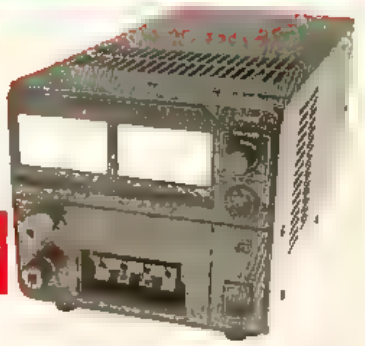
DON'T MISS THE ACTION!

3-15V 25 Amp DC Power Supply

Our highest performance power supply, with current up to 25 Amps ICAS at 15 Volt, 20 Amps continuous at 13.8 Volts, and lower currents at lower voltages. It also has front panel metering, plus high-current banana-style and low-current output connections for extra flexibility. An internal heatsink and thermally-switched fan provides cooling without protrusions in the metal case (which measures 320 x 150 x 145mm). Don't confuse this power supply with look-alikes, it's been specially modified to DSE specifications for more reliable long-term operation, and uses a rugged 50 Amp bridge rectifier and a trifilar-wound transformer. We've also provided extensive overload protection through dissipation-limiting circuitry for the pass transistors, a 30 Amp instantaneous current limit, quality AC mains circuit breaker, a transformer thermal fuse and fused auxiliary secondary winding.

D 3800

SAVE $50 **$249**



Yaesu FT-90R 2m/70cm micro mobile

Another engineering breakthrough from Yaesu – a tiny dual band mobile rig with high power output, a remoteable front panel, and a rugged receiver front-end. The FT-90R provides 50W RF output on the 2m band as well as 35W output on the 70cm band, a solid die-cast casing with microprocessor controlled cooling fan for reliable operation, and a large back-lit LCD screen, all in a package measuring just 100mm x 30mm x 138mm.

Also includes:

- Wide dynamic range receiver for greatly reduced pager breakthrough.
- Huge receiver coverage – 100-230, 300-530, 810-999.975MHz (Cellular blocked).
- 180 memories and a variety of scanning functions.
- Built-in CTCSS encode/decode, battery voltage metering.
- Designed for 1200 and 9600 baud packet operation.
- Tiny remoteable front panel (requires optional YSK-90 separation kit)
- Includes MH-42 hand mic, DC power lead, and easy to follow instructions.

D 3312 **2 YEAR WARRANTY**

AMAZING VALUE!

YAESU **$699**

YSK-90 Front Panel Separation Kit **$144**

D 3317

Yaesu FT-840 HF Mobile **ONLY 10 PCS AVAILABLE AT THIS GREAT CLEARANCE PRICE!**

An ideal first rig for home or vehicle use, the economical Yaesu FT-840 covers all HF bands from 160-10m with 100W PEP output, and provides continuous receiver coverage from 100kHz to 30MHz.

The FT-840 provides:

- SSB/CW/AM operation(FM optional)
- 100 memory channels, two independent VFOs per band
- Large back-lit LCD screen, uncluttered front panel
- Effective noise blanker
- Variable mic gain and RF power controls
- SSB speech processor for greater audio punch

2 YEAR WARRANTY

- IF Shift & CW Reverse to fight interference
- Dual Direct Digital Synthesisers for cleaner TX/RX operation
- Compact case size of just 238 x 93 x 243mm(W.H.D.)

D 3275 **YAESU**

FM module suit FT-840 **$109**

D 2932

SAVE $200 **$1383**

Some units may be shop soiled or missing packaging, but full warranty applies.

PHONE FAX AND MAIL ORDERS

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PH

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completely satisfied. (Software, books, contracted phones, ADMS packages excluded)

DICK SMITH ELECTRONICS

That's where you go!

Yaesu transceivers and accessories stocked in selected stores only
Other stores can place orders on a deposit-paid basis
Offers expire 28/2/2001 All prices shown are inclusive of GST

PLEASE RECYCLE

Division Directory

The Amateur Radio Service exists for the purpose of self training, intercommunication and technical investigation. It is carried out by amateurs who are duly authorised people interested in radio technique solely with a personal aim and without pecuniary interest

The Wireless Institute of Australia represents the interests of all radio amateurs throughout Australia National representation is handled by the executive office under council direction One councillor for each of the seven Divisions. This directory lists all the Divisional offices, broadcasts schedules and subscription rates. All enquiries should be directed to your local Division.

VK1 Division Australian Capital Territory,
GPO Box 600 Canberra ACT 2601

President	Gilbert Hughes	VK1GH
Secretary	Peter Kloppenburg	VK1CPK
Treasurer	Ernie Hosking	VK1LK

VK2 Division News South Wales
109 Wigram St, Parramatta NSW
(PO Box 1066, Parramatta 2124)
(Office hours Mon-Fri 1100-1400)
Phone 02 9689 2417
Web *http://www.ozemail.com.au/~vk2wi*
Freeca. 1800 817 644
e-mail *vk2wi@ozemail.com.au*
Fax 02 9633 1525

President	Michael Corbin	VK2YC
Secretary	Barry White	VK2AAB
Treasurer	Pat Leeper	VK2JPA

VK3 Division Victoria
40G Victory Boulevard Ashburton VIC 3147
(Office hours Tue & Thur 0930-1500)
Phone 03 9885 9261
Web. *http://www.tbsa.com.au/~wiavic/*
Fax 03 9885 9298
e-mail *wiavic@alphalink.com.au*

President	Jim Linton	VK3PC
CEO	Barry Wilton	VK3XV
Secretary	Peter Mill	VK3APO

VK4 Division Queensland
GPO Box 638 Brisbane QLD 4001
Phone 07 3221 9377
e-mail *office@wiaq.powerup.com.au*
Fax 07 3266 4929
Web *http://www.wia.org.au/vk4*

President	Colin Gladstone	VK4ACG
Secretary	David Jones	VK4OF
Treasurer	Bill McDermott	VK4AZM
Office Mgr	John Stevens	VK4AFS

VK5 Division South Australia and Northern Territory
(GPO Box 1234 Adelaide SA 5001)
Phone 08 8294 2992
web *http://www.sant.wia.org.au*

President	Jim McLachlan	VK5NB
Secretary	David Minchin	VK5KK
Treasurer	John Butler	VK5NX

VK6 Division Western Australia
PO Box 10 West Perth WA 6872
Phone 08 9351 8873
Web. *http://www.omen.net.au/~vk6wia/*
e-mail *vk6wa@omen.net.au*

President	Neil Penfold	VK6NE
Secretary	Christine Bastin	VK6ZLZ
Treasurer	Bruce Hedland-Thomas	VK6OO

VK7 Division Tasmania
PO Box 371 Hobart TAS 7001
Phone 03 6234 3553 (BH)
Web: *http://www.tased.edu.au/tasonline/vk7wia*
also through *http://www.wis.org.au/vk7*
email: *bates|w@netspace.net.au*

President	Phil Corby	VK7ZAX
Secretary	John Bates	VK7RT
Treasurer	John Bates	VK7RT

Broadcast schedules

All frequencies MHz. All times are local.

VK1WI: 3.590 LSB, 146.950 FM each Sunday evening from 8.00pm local time. The broadcast text is available on packet, on Internet *aus.radio.amateur.misc* news group, and on the VK1 Home Page http://www.vk1.wia.ampr.org

Annual Membership Fees. Full $77.00 Pensioner or student $63.00. Without *Amateur Radio* $49.00

From VK2WI 1.845, 3.595, 7 146*, 10.125, 14 160, 24.950 28.320, 29.120, 52.120, 52.525, 144.150, 147.000, 438.525, 1281.750 (* morning only) with relays to some of 18.120, 21.170, 594.750 ATV sound. Many country regions relay on 2 m or 70 cm repeaters. Sunday at 1000 and 1930. Highlights included in VK2AWX Newcastle news, Monday 1930 on 3.593 plus 10 m, 2 m, 70 cm, 23 cm. The broadcast text is available on the Internet newsgroup *aus.radio.amateur.misc*, and on packet radio.

Annual Membership Fees. Full $78.00 Pensioner or student $61.00. Without *Amateur Radio* $47.00

VK3BWI broadcasts on the 1st and 3rd Sunday of the month at 8.00pm. Primary frequencies, 3.615 DSB, 7 085 LSB, and FM(R)s VK3RML 146.700, VK3RMM 147.250, VK3RWG 147.225, and 70 cm FM(R)s VK3ROU 438.225, and VK3RMU 438.075. Major news under call VK3ZWI on Victorian packet BBS and WIA VIC Web Site.

Annual Membership Fees. Full $78.00 Pensioner or student $61.00. Without *Amateur Radio* $47.00

VK4WIA broadcasts on 1.825 MHz SSB, 3.605 MHz SSB, 7 118 MHz SSB, 10.135 MHz SSB, 14 342 MHz SSB, 21.175 MHz SSB, 28.400 MHz SSB, 29.860 MHz FM (rptr), 147.000 MHz, and 438.525 MHz (in the Brisbane region, and on regional VHF/UHF repeaters) at 0900 hrs K every Sunday morning. QNEWS is repeated Monday evenings, at 19.30 hrs K, on 3.605 MHz SSB and 147.000 MHz FM. On Sunday evenings, at 18.45 hrs K on 3.605SSB and 147.000 FM, a repeat of the previous week's edition of QNEWS is broadcast Broadcast news in text form on packet is available under WIAQ@VKNET QNEWS Text and real audio files available from the web site

Annual Membership Fees. Full $85.00 Pensioner or student $72.00. Without *Amateur Radio* $56.00

VK5WI: 1827 kHz AM, 3.550 MHz LSB, 7.095 AM, 14.175 USB, 28.470 USB. 53.100 FM, 147.000 FM Adelaide, 146.700 FM Mid North, 146.800 FM Mildura, 146.825 FM Barossa Valley, 146.900 FM South East, 146.925 FM Central North, 147.825 FM Gawler 438.425 FM Barossa Valley, 438.475 FM Adelaide North, ATV Ch 35 579.250 Adelaide (NT) 3.555 USB, 7.065 USB, 10.125 USB, 146.700 FM, 0900 hrs Sunday. 3.585 MHz and 146.675 MHz FM Adelaide, 1930 hrs Monday.

Annual Membership Fees. Full $77.00 Pensioner or student $63.00. Without *Amateur Radio* $49.00

VK6WIA. 146.700 FM(R) Perth at 0930hrs Sunday relayed on 1.865, 3.564, 7.075, 10.125, 14.116, 14.175, 21.185, 29.120 FM, 50.150 and 438.525 MHz. Country relays 3.582, 147.200 (R) Cataby, 147 350 (R) Busselton, 146.900 (R) Mt William (Bunbury) 147.000 (R) Katanning and 147.250 (R) Mt Saddleback. Broadcast repeated on 146.700 at 1900 hrs Sunday relayed on 1.865, 3.564 and 438 525 MHz country relays on 146.900,147.000, 147.200, 147.250 and 147.350 MHz. Also in "Real Audio" format from [redacted]

Annual Membership Fees. Full $69.00 Pensioner or student $59.00. Without *Amateur Radio* $38.00

VK7WI: 146.700 MHz FM (VK7RHT) at 0930 hrs Sunday relayed on 147.000 (VK7RAA), 146.725 (VK7RNE), 146.625 (VK7RMD), 3.570, 7.090, 14.130, 52.100, 144.150 (Hobart), repeated Tues 3.590 at 1930 hrs.

Annual Membership Fees. Full $88.00 Pensioner or student $75.00 Without *Amateur Radio* $55.00

VK8 Northern Territory (part of the VK5 Division and relays broadcasts from VK5 as shown, received on 14 or 28 MHz).

Division News

VK2 Notes

By Pat Leeper VK2JPA

Annual General Meeting

The VK2 Annual General Meeting will take place on Saturday 14 April 2001, at Amateur Radio House 109 Wigram Street Parramatta, commencing at 11.00 am

Nominations for Council and "Motions on Notice" must be received at the office not later than 12 noon on Saturday 3 March 2001. The necessary nomination forms will be available in February from the office.

This is your chance to have a say in the running of this Division. New blood is needed on the Council to pursue aims for the betterment of Amateur radio - to protect our frequencies, and draw younger people to the hobby. The old guard is fading fast; it's time for the new generation to take a hand.

Remember to make your ballot count, by reading the instructions carefully and marking your choices for nine councilors.

We regret to report the resignation of Michael Corbin VK2YC from the positions of President and Federal Councilor due to health and family reasons. He is remaining as a Divisional Councilor so we haven't completely lost his expertise. Michael is retaining the job of Deceased Estates Officer

The Council unanimously elected Terry Davies VK2KDK (photo) as President for the remainder of the term Terry is another of our country councilors, residing at Moonbi, north of Tamworth.

The Christmas get-together had a disappointing attendance We were

hoping for more members to turn up – we catered for extras, just in case. The event went well, with much eating and talking. Keep this in mind for next year – it's free'

That's it for this month. See you next time.

VK1 Notes

Forward Bias

By Peter Kloppenburg VK1CPK

A 2-metre repeater has been established in Boundary Rd, Young (NSW) recently. Sponsored by the ACT Division, the repeater operates with the callsign of VK2RYG on a transmit frequency of 146.775 and receiving on 146.175 MHz.

The township of Young is situated 230 km North -West of Canberra and is surrounded by seven other important townships, all of which have main roads leading to Young, but none of which have an Amateur Radio Club - No club, No repeater.

To overcome this and to provide this important district with a repeater service, the ACT Division agreed to be the sponsor. All costs associated with this sponsorship are recompensed by a handfull of radio amateurs who live in the district. This includes Cowra, Boorowa, Yass, Gundagai, Junee, Tumora, and Grenfell.

All of these townships are covered by the repeater as it is located on top of a Shire Council communications tower which ensures coverage with a minimum range of 80 km Next time you are driving around the Young district, try the repeater, and let us know how well the area is covered

For those who want to know the repeater set-up. It is multi-coupled into split TX and RX, double-folded Arrays with large separation on the 75-metre tower.

With a great many thanks to Young Shire Council which allowed the use of their tower, the ACT Division for sponsorship, and to a small bunch of dedicated amateurs including Paul Bell VK1BX, Peter Page VK2APP, and Robert Milliken VK1KRM.

The next general meeting will be held on January 22, 2001 at Room 1, Griffin Centre, Civic. Cheers

Silent Key

RON DUNNE VK3MEH

Ron was keen on electronics from boyhood in Flinders and during his early adult life he built several small portable radios. Later he built the home amplifier and record player system.

He learnt Morse code as a Scout and built on that foundation as he studied at TAFE in Wantirna in the early seventies. From then on he collected more equipment and enjoyed contacts with numerous other operators. He particularly liked taking the small 'handheld' when we were travelling, making some interesting contacts in the Gippsland and Peninsular areas. On retirement in the mid eighties, he valued increasingly his talks with radio people and when interest waned, due to a long illness, he still liked to listen to ordinary shortwave radio for many hours.

He was a quiet man who valued one to one contacts. Ron died at home in Upwey on May 10, 2000

Heather Dunne

VK3 Notes

Web site: www.wiavic.org.au Email: wiavic@wiavic.org.au

By Jim Linton VK3PC

Congratulations!

To be heartedly congratulated on his milestone is John Kelleher VK3DP, the WIA Federal Awards Officer, who has begun his 10th year in the voluntary job. A keen DXer himself, John is responsible for the administration of the 11 awards in the WIA awards program including the DXCC and compilation of the Australian DXCC table

It is understood he was amazed when David McAulay VK3EW arrived recently on appointment to claim his DXCC for all 334 entities (countries).

John was delighted in checking David VK3EW's "full house" of DXCC QSL cards - the only one in VK to achieve this level of DX success. Congratulations to Electric Wireless.

Congratulations to John Martin VK3KWA on his decade of achievement through a combination of roles - chairman of the WIA Federal Technical Advisory Committee, VHF/UHF contest management and VHF/UHF distance records judge.

The average radio amateur would be unaware of the contributions made by John VK3KWA that includes input to WIA policy, the WIA/ACA liaison process, band planning and improvements to the regulations for the Amateur Service in Australia.

This "quiet achiever" has the respect and cooperation of the individual Technical Advisory Committees in each WIA Division, and is able to make the system work for the benefit of us all. Well done John Martin VK3KWA.

There are a number of other VK3's who have made long-term and ongoing voluntary contributions to the WIA.

They include:

David Wardlaw - IARU Vice President, previously WIA senior office bearer

Gil Sones VK3AUI - AR magazine including the position of Editor

Brenda Edmonds VK3KT - Federal Education Officer

Peter Gibson VK3AZL - AR magazine including Technical Editor

John Edmonds VK3AFU - Federal Historian

Ron Fisher VK3OM - AR magazine including equipment reviewer

And congratulations to a pair just starting out on a hopefully long involvement with amateur radio.

Tim Broomhead VK3HTB, 11, and Sam Jackson VK3HXR, 12, are both recent graduates from the EMDRC class conducted by Jonas Sadauskas VK3VF.

Are your details correct?

A recent crosscheck of the WIA Victoria member database found some inconsistencies. If you have changed your callsign please let us know so we can update our records

The QSL Bureau should be notified separately. Could those who receive AR magazine please check the address label and let us know if it is not accurate.

VK7 Notes

"QRM"

As the year ends the "silly season" takes over in the Tasmanian Institute affairs same as in the TV etc., and all our activities wind down to just the festive celebrations.

The November Sewing circle barbecue at Rosie Vanyan, the QTH of Bill Vk7AAW near Hobart was, as usual, a great success with a host of Amateurs attending from all over the State. The Hobart southern branch held their end of year Barbie at their clubrooms on the Domain , the Launceston northern branch ran a most successful barbecue at Myrtle Park beside the lovely St Patricks River while the northwest coast branch finished the year with a dinner at Ulverstone with about 30 attending

The Joan Fudge Award, for service to the north-west branch and issued in memory of our first north-west lady ham who filled the post of Secretary for some years was this year won by Phil Harbeck, VK7PU, for his outstanding work organizing our involvement as the communications group for the Tasmanian car rallies.

Finally the Tassie branch wishes to acknowledge the work of our Federal Executive under the fine leadership of Peter Naish and to wish them, and, indeed all the executives of out State Divisions a very successful 2001 year

Cheers for now

Ron Churcher, VK7RN

AR Silent Key

Well known DXer becomes a silent key

Amateurs all around the world were shocked with the accidental death of Alan Mills, currently with the call EA7BA and living at Vera in the province of Almaria in Spain.

Alan would have had to be the most well known Spanish Dxer always putting a booming signal out on 14.153 MHz. His logbook recorded hundreds of Australian stations among the tens of thousands logged.

Alan died in mid-November as a result of a motor cycle accident near his home when a car came out of a side road without stopping to check. He never regained consciousness and died 2 hours later.

Alan started his amateur career as GW3NNF in Anglesea, Wales where he was the Chief engineer of a nuclear power station. He designed and built quad antennas as a sideline but following some really bad storms he diverted his attention to Yagis. On retirement he moved to southern Spain and set up his home on the only hill in the area for 5 km. in any direction – if his signal wasn't "10 Over" there was no propagation !.

The writer has spent a week visiting Alan and his dear wife Karla in Spain Karla seems to be coping well but his demise has left a very silent hole in the amateur spectrum

From all your friends around Australia – thanks Alan for being there for us.

Ron, VK7RN.

ALARA

Christine Taylor VK5CTY
VK5CTY@VK5TTY or
geencee@picknowl.com.au

Novice Winner

Susan, VK7LUV (previously VK4LUV) was so thrilled recently when she received the Keith Howard Trophy for the highest Score by a Novice in the VK Novice Contest 2000 that she suspended all her plans for the day till she had found a suitable place to display the trophy and put it there!

Last year she won the VK7 section of the contest that was a thrill but to win overall was even better.

Well done Susan, you join a select group which includes the current President of ALARA, Bev VK4NBC who has always made the effort to use her Novice licence to the full.

Also

In November Susan received a certificate for her DXCC *on 15 metres* (she could hardly contain herself long enough to find a suitable place on her "brag" wall for it). It is hard enough to gain a DXCC alone, but to get it for just one band and using novice power is an enormous achievement, especially as Susan is also a full time Mum to primary school aged children. Well done, Susan!! Now that Susan is allowed to operate on 20 and 40 metres I expect she will be trying for DXCC on those bands, too. Keep watching to see how soon she makes it!

Two Recent Silent Keys

The news that Brian VK6AI, OM of Bev VK6DE had become a silent key was a shock to the ALARA community. Bev and Brian were well known in the amateur world and on the Travellers' Net They toured much of Australia and made the ALARAMEETS part of several trips Bev was the co-ordinator of the MEET in Perth and was one of the VK YLs in Hamilton, NZ and Norfolk Island at which time we were not aware of any problems. Our deepest sympathy is with Bev and her family.

A less sudden SK was the passing of John VK5KX father of Janet VK5NEI. John has been in poor health for some time; nevertheless, he will be sadly missed by his family and friends. Our sympathy to all concerned.

An Early YL Becomes A Silent Key

In November of last year Betty Wallace (nee Geisel) became a SK. Betty was recognised as the first YL in VK5 to hold an amateur licence. She gained her licence in 1936 at the age of 16 and was given VK5YL as her callsign.

Betty built her own transmitters, first with a type 42 valve in an electron-coupled oscillator that produced an output power of 10 watts. Later she built a transmitter that used a 38 Tri-tet crystal oscillator driving a pair of 42s in the final amplifier. This increased her output power to 15 watts.

Her receiver was a two valve regenerative unit with a type 30 in the RF stage and a type 18 in the audio stage. She did build a superhet receiver after she moved to Adelaide to work but the details are missing.

She ran all the equipment from batteries while she was living in Murray Bridge though once she was in the city she used mains power. She even made her own high tension batteries using the carbon electrodes extracted from 'dead' dry cells and fitting them in Marmite jars. The negative electrode was made from a rectangle of zinc amalgamated with mercury and the electrolyte was either sal ammoniac or common salt. In this day and age to go to this much trouble is unimaginable!'

Betty operated mostly on 40 and 80 with some 20 metre contacts and used CW almost exclusively. The aerial was a half wave dipole on 40 metres supported by a 40 foot Oregon pole erected by two local OM amateurs.

Betty worked for National Radio in Adelaide, doing the same work, repairing radios, as the young men sitting beside her but was paid only about half as much, so she changed jobs to work in Gerard and Goodmans radio store where her work and knowledge was more highly valued.

During this time she also gained her First Class Commercial Operators Certificate in 1941 but was told she was unlikely to ever be able to use it as only males were ever employed in the radio rooms on ships at sea !! Both Betty's amateur and commercial certificates were on display in the Telecom Museum

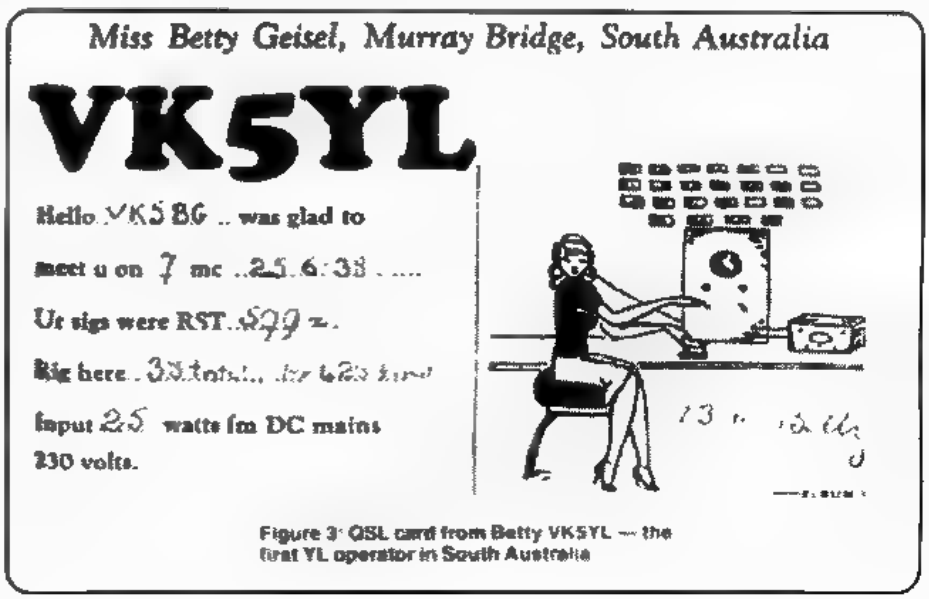

Figure 3: QSL card from Betty VK5YL — the first YL operator in South Australia

in Adelaide until it closed and are now in storage with all the other historic items

Betty stopped operating when WW2 came and all amateur radio equipment had to be sealed and by the end of the War she had taken up other interests. She worked for a time as a tracer in the Drawing Office of the Adelaide Electric Supply Company and studied maths and physics at night. Subsequently she got married and later took up teaching.

She continued to live a busy and varied life including bush walking, cycling and hand spinning. She is survived by a husband (Neil) and three grown children and will be missed by her many friends many of whom did not know about her amateur radio interests until they heard about it at her funeral.

My thanks to Lloyd VK5BR and Peter VK5XQ for the above information.

AX9YL Shack

"VK Thrives". Standing — Faith VK5HFC, Jean VK5TSX, Meg VK5YG, Jeanne VK5JQ, Christine VK5CTY and Jean Day VK3/SWL. Seated — Tina VK5TMC and Marilyn VK3DMS

Several years ago ALARA did contact Betty with an invitation to meet some of us for lunch but we did not actually ever get together, however we did make Betty aware that we knew about her and recognised her contribution to the YL amateur radio world.

ALARA Contest Logs

I hope you remembered to send off your logs to Marilyn VK3DMS. Conditions during the day were less than satisfactory but the evening activity on 80 metres was excellent.

Because of the disappointing participation rates over the last few years there may be some changes for next year. Watch this space for details.

YL Awards

In the November issue of AR there was over a page and a half of various awards available for making contact with YLs. Most of these are available to all amateurs and would make interesting talking points when they adorn the 'brag wall' of your shack. Why not keep that copy of AR nearby and aim for the appropriate number of contacts. This could be your project for 2001. Have a go!!

VK5 YL Participation In The AHARS Buy And Sell

Because it happens that most of the VK5 YLs are also members of AHARS the ladies run a food stall at the Buy and Sell. This year we had a number of visitors as well as the regulars of Jean VK5TSX, Tina VK5TMC, Meg VK5YG and Christine VK5CTY with Marilyn VK3DMS (almost a regular, too) and Jean Day also from VK3 and the latest VK5 YL, Faith VK5HFC. A photo was taken, entitled the "VK Thrives" as this is what Marilyn frequently uses, living in Mildura she feels she is geographically closer to VK5 than to VK3!!.

The photos of the Hamilton International were studied with interest. Many of the faces there were recognised from the ALARAMEETS, others were of interest because they have been contacted but never seen before.

ar

AMSAT

Bill Magnusson VK3JT

Phase 3D Successfully Launched

A new era in amateur radio communications was ushered in on November 16, 2000 (UTC) as AMSAT-DL Executive Vice President and P3D Mission Director Peter Guelzow, DB2OS, informed AMSAT News Service that the launch of the Phase 3D satellite from the European Spaceport in Kourou, French Guiana was successful. "It was a textbook launch" said Peter, "from the first minute of flight, until P3D separated from the Ariane 5 launch vehicle, all received telemetry indicates the launch went perfectly and our satellite appears to be in very good health." Launched with three other satellites - the large PAS-1R communications satellite and the smaller STVR-1C and 1D satellites, Phase 3D was placed into geostationary transfer orbit, from where it will be nudged into its final elliptical orbit. The Ariane 5 flight proved to be a record setting mission as it marked the first use of the ASAP-5 platform. The ASAP-5 enables the launcher to carry auxiliary micro and mini satellite payloads.

P3D is the largest amateur radio satellite ever built and launched. AMSAT-NA President Robin Haighton, VE3FRH, welcomed the news of the launch, noting "that the design, building and financing of P3D by international volunteers is a great achievement." Immediate AMSAT-NA past President Keith Baker, KB1SF, told ANS that he was "delighted" by the news of the Phase 3D launch. "Obviously this is a big thrill for all of us who have spent the better part of our lives over the past ten years bringing the satellite to fruition. I have no doubt that today will be regarded as one of the greatest days in the history of amateur radio." AMSAT-NA Board of Directors Chairman Bill Tynan, W3XO said, "I can't begin to tell you how happy I am to see P3D in orbit, as I followed the launch sequence, I thought of the many people who have been involved with this project from the very beginning and how pleased everyone must be to see the reward of such hard work."

Although safely in orbit, there is much work to be done with Phase 3D before the satellite is opened for general amateur radio use. At the time of writing initial housekeeping tasks are underway to verify the health of the many complex systems onboard - followed by bringing these systems online. P3D was placed into a transfer orbit used for geosynchronous satellites. To move P3D from this orbit several motor burns will be necessary using the spacecraft's 400 Newton motor and the "Arc-jet" motor. When these maneuvers are completed and three-axis stabilization is achieved, the satellite solar panels will then be spread out to receive full sunlight. It is anticipated that at this time the satellite will be fully operational for use by amateur radio operators around the world.

The above information was downloaded from the Amsat News Service (ANS). You can receive regular bulletins from ANS if you have an internet connection. Visit the AMSAT-NA site at www.amsat.org and you can register to receive these bulletins by email.

In accordance with tradition and now that it is in orbit and functioning, Phase 3D has been allocated an "OSCAR" number. It will be known as AMSAT-OSCAR-40 or AO-40. As mentioned above the orbit of AO-40 will undergo almost continuous adjustment for many months. As its services come on line, or if you are wanting to follow its progress through the 400 baud engineering beacon telemetry, it will be necessary to update your keplerian element set as new figures are published. Once AO-40s orbit is finally established it will be very stable and the keps should last for several months without updating. Next month I'll take you through the process of decoding and (hopefully) making sense of the telemetry stream that is so important in monitoring the 'health' of our latest flagship.

"S" Band Beacon Tests on AO-40.

At the time of writing this column the "S" band beacon on AO-40 has been activated and is working very well. The attitude of the spacecraft is being adjusted in preparation for the motor burn to lift AO-40's apogee to 50 000 km. The current attitude means that we are essentially looking at the side of the spacecraft and this is producing some interesting Doppler frequency modulation effects on the 2.4 GHz beacon. The 2.4 GHz antenna is mounted near the outer edge of the spaceframe. The side-on attitude and the current, temporary spin stabilisation of the satellite mean that the 2.4 GHz antenna is alternately moving away from and closer to the observer on the ground. This movement produces a small but noticeable positive and negative Doppler effect. The same effect would be there

The AMSAT group in Australia.

The National Co-ordinator of AMSAT-VK is Graham Ratcliff VK5AGR. No formal application is necessary for membership and no membership fees apply. Graham maintains an email mailing list for breaking news and such things as software releases. Members use the AMSAT-Australia HF net as a forum.

AMSAT-Australia HF net.

The net meets formally on the second Sunday evening of the month. In winter (end of March until the end of October) the net meets on 3.685 MHz at 1000UTC with early check-ins at 0945UTC. In summer (end of October until end of March) the net meets on 7.068 MHz at 0900UTC with early check ins at 0845UTC. All communication regarding AMSAT-Australia matters can be addressed to:

AMSAT-VK,
GPO Box 2141, Adelaide, SA. 5001.

Graham's email address is: vk5agr@amsat.org

for any of the antennas mounted near the edge of the spaceframe but on 2.4 GHz it is particularly noticeable and even though the 400 baud PSK signal is very strong, this "wobulation" as it is known, makes it difficult to tune in the telemetry beacon. On a recent test I managed to only decode 2 blocks with a positive CRCC OK check out of a half hour or so listening. This compares with the perfect decoding of the 2 metre beacon telemetry blocks. Thankfully this condition will not manifest itself once the satellite is 3-axis stablilised and nadir pointing. But it is certainly an interesting effect. I will be monitoring the 2.4 GHz beacon using a variety of antennas during the next month or two and I'll publish the results in this column.

6 monthly Update of Operational Amateur Radio Satellites

Compiled from information available on the AMSAT News Service.

International Space Station / ARISS

Worldwide packet uplink: 145.990 MHz
Region 1 voice uplink: 145.200 MHz
Region 2/3 voice uplink: 144.490 MHz
Worldwide downlink: 145.800 MHz
TNC callsign RZ3DZR

The ARISS station has been heard and worked in USA and Russia but I have no reports to hand at the time of writing of any VK contacts.

MIR Space Station

145.985 MHz (FM) voice and SSTV (Robot 36 Mode)
Launched: February 18, 1986

Status: Unmanned. All amateur radio gear switched off. It is very unlikely that any further amateur radio operation will take place from MIR. Reports from many sources suggest it may be briefly manned with a 'clean-up' crew early in 2001 prior to ditching the spacecraft in a remote area of the Pacific Ocean sometime in February 2001.

OSCAR 10 AO-10

Uplink 435 030 to 435.180 MHz CW/LSB
Downlink 145.975 to 145.825 MHz CW/USB
Beacon 145 810 MHz (unmodulated carrier)
The old 'war-horse' still surprises with sometimes-excellent signals.
Definitely still worth checking out. With the advent of AO-40, AO-10 may see more activity as people ready their stations for AO-40 operations.

UoSAT OSCAR-11 ... UO-11

Downlink 145.825 MHz FM (1200 baud AFSK)

Mode-S Beacon 2401.500 MHz

Status: Operational. Oscar-11 does not carry any transponders. It's beacons transmit telemetry data which is used by schools and scientific study groups. The 2.4 GHz beacon is an excellent test of "S" mode gear. It is transmitting only a fraction of a watt and quite sensitive gear is needed to hear its signal.

RADIO SPORT ... RS-12

Uplink 21.210 to 21.250 MHz CW/SSB
Uplink 145.910 to 145.950 MHz CW/SSB
Downlink 29.410 to 29.450 MHz CW/SSB
Downlink 145.910 to 145.950 MHz CW/SSB
Beacon 29.408 MHz
Robot Uplink 21.129 MHz
Robot Downlink 29.454 MHz
Status: unconfirmed operation on mode KT or mode T.

RADIO SPORT RS-13

Uplink 21.260 to 21.300 MHz CW/SSB
Downlink 29.460 to 29.500 MHz CW/SSB
Downlink 145.860 to 145.900 MHz CW/SSB
Beacon 145.863 MHz

Still some confusion about exactly which mode this satellite is in. Best advice is to listen for beacon activity and try uplinking and listening for your signal being repeated on either 2m or 10m.

UoSAT OSCAR-14 UO-14

Uplink 145.975 MHz FM
Downlink 435.070 MHz FM
Status: Operational, mode J

I have not received any reports lately but as far as I know this satellite is still operational in FM repeater mode.

RADIO SPORT RS-15

Uplink 145.858 to 145.898 MHz CW/SSB
Downlink 29.354 to 29.394 MHz CW/SSB
Beacon 29.352 MHz (intermittent)
SSB meeting frequency 29.380 MHz (unofficial)

Spasmodic operation. Some activity has been heard in VK.

PACSAT AO-16

Uplink 145.90 145.92 145.94 145.96 MHz FM
(using 1200 baud Manchester FSK)
Downlink 437.025 MHz SSB (RC-BPSK 1200 baud PSK)
Mode-S Beacon 2401.1428 MHz not on at present.
Broadcast Callsign: PACSAT-11
BBS Callsign PACSAT-12

Status: Semi-operational The VHF uplink and the UHF PSK transmitter are operational (TX power at 1.5 watts).

LUSAT LO-19

Uplink 145.84 145.86 145.88 145.90 MHz FM
(using 1200 baud Manchester FSK)
CW downlink 437.125 MHz
Digital downlink 437.150 MHz SSB (RC-BPSK 1200 baud PSK)
Broadcast Callsign LUSAT-11
BBS Callsign LUSAT-12
Status: Semi-operational in beacon mode only. No BBS or transponder are operating.

JAS-1b FO-20

Uplink 145.90 to 146.00 MHz CW/LSB
Downlink 435.80 to 435.90 MHz CW/USB
Status: Operational. FO-20 is in mode JA continuously

Tak JA2PKI, reported the FO-20 control station operators believe that the UVC (Under Voltage Controller) now is regulating the transponder. The UVC monitors battery voltage and tries to protect the batteries from over discharge. Tak notes that FO-20, launched in 1990, is now over 10 years old.0

UOSAT UO-22

Uplink 145.900 or 145.975 MHz FM 9600 baud FSK
Downlink 435.120 MHz FM
Broadcast Callsign UOSAT5-11
BBS Callsign UOSAT5-12
Status: Operational in 9k6 baud digital data mode. Still carrying heaps of SatGate personal mail traffic for the terrestrial packet radio network. UO-22 has been a consistent performer with strong downlink signal and sensitive uplink.

KITSAT KO-23

Uplink 145.900 MHz FM (9600 baud FSK)
Downlink 435.170 MHz FM
Broadcast Callsign HLO1-11
BBS Callsign HLO1-12
Status: Intermittent with the downlink transmitter operating at unpredictable intervals depending on battery condition. KO-23 may be nearing the

end of its useful life. It was for many years a most capable satellite. Its high orbit meant that passes as long as 20 – 25 minute were common. It was for years the satellite-of-choice for most digital satellite operators.

KITSAT KO-25

Uplink 145.980 MHz FM (9600 baud FSK)
Downlink 436.500 MHz FM
Broadcast Callsign HL02-11
BBS Callsign HL02-12
Status: Operational in 9k6 baud digital data mode.

ITAMSAT IO-26

Uplink 145.875 145.900 145.925 145.950 MHz FM (1200 baud)
Downlink 435.822 MHz SSB
Broadcast Callsign ITMSAT1-11
BBS Callsign ITMSAT1-12
Status: Semi-operational, the digipeater function is on and open for APRS users

AMRAD AO-27

Uplink 145.850 MHz FM
Downlink 436.795 MHz FM

I still have no confirmation of this satellite being active in the southern hemisphere.

JAS-2 FO-29

Status: Operational
Voice/CW Mode JA
Uplink 145.90 to 146.00 MHz CW/LSB
Downlink 435.80 to 435.90 MHz CW/USB
Digital Mode JD
Uplink 145.850 145.870 145.910 MHz FM
Downlink 435.910 MHz 1200 baud BPSK or 9600 baud FSK
Callsign 8J1JCS
Digitalker 435.910 MHz
Mode schedule alternates between digital and analogue.

TMSAT-1 TO-31

Uplink 145.925 MHz (9600 baud FSK)
Downlink 436.925 MHz (9600 baud FSK)
Broadcast Callsign: TMSAT1-11
BBS Callsign TMSAT1-12
Status: Operational with many detailed terrain pictures from all round the world.

TECHSAT-1B GO-32

Downlink 435.225 MHz using HDLC telemetry
Status: Semi-operational with efforts underway to bring GO-32 on line. The satellite transmits a 9600-baud burst every 30

PANSAT PO-34

Uplink/downlink frequencies have never been released
Launched: October 30, 1998 by the Shuttle Discovery

Status: Unknown, nothing heard of the fate of this satellite from the Naval Postgraduate School. It was reputed to have spread-spectrum transponders and software was to be developed for radio amateur use. No further news since shortly after launch.

SUNSAT SO-35

Mode J Uplink: 145.825 MHz FM
Mode J Downlink: 436.250 MHz FM
Mode B Uplink: 436.291 MHz FM
Mode B Downlink: 145.825 MHz FM
Status: Operational.

SunSat is currently transmitting a greeting to AO-40:

'Greetings AMSAT OSCAR-40, 73 from SunSat OSCAR-35' The SunSat package includes 1200 and 9600 baud digital store-and-forward capability and a voice 'parrot' repeater system that will be used primarily for educational demonstrations in addition to Mode B/J operation. The satellite has two VHF and two UHF transmit-receive systems.

UoSAT-12 UO-36

Uplink 145.960 MHz (9600 baud FSK)
Downlink 437.025 MHz 437.400 MHz (38k4 baud FSK)
Broadcast Callsign UOSAT12-11
BBS Callsign UOSAT12-12
Status: Operational UO-36 carries a number of imaging payloads, digital store-and-forward communications and mode L/S transponders.

SAUDISAT-1A

Uplink frequency yet to be published.
Downlink 437.075 MHz
Broadcast Callsign SASAT1-11
BBS Callsign SASAT1-12
Status: Commissioning stage, initial housekeeping tasks underway SaudiSat-1A will operate as 9600 baud digital store-and-forward systems as well analog FM repeater mode capability. One of two new ham satellites from the Kingdom of Saudi Arabia built by the Space Research Institute at the King Abdulaziz City for Science and Technology.

SAUDISAT-1B

Uplink frequency yet to be published.
Downlink 436.775 MHz
Broadcast Callsign SASAT2-11
BBS Callsign SASAT2-12
Status: Commissioning stage, initial housekeeping tasks underway SaudiSat-1B will operate as 9600 baud digital store-and-forward systems as well analog FM repeater mode capability One of two new ham satellites from the Kingdom of Saudi Arabia built by the Space Research Institute at the King Abdulaziz City for Science and Technology

TIUNGSAT-1

Uplink 145.850 or 145.925 MHz 9600 baud FSK FM
Downlink 437.325 MHz 38k4 baud FSK FM
Broadcast callsign MYSAT3-11
BBS Callsign MYSAT3-12

The 38k4 baud FSK downlink began operating in early December 2000. TiungSat-1 is Malaysia's first micro-satellite and in addition to commercial land and weather imaging payloads offers FM and FSK Amateur Radio communication Spectacular, highly detailed images from all round the world This brings to two, the number of amateur radio satellites operating in high speed digital mode. TiungSat-1 and UO-36 may well be the forerunners of amateur radio satellites with even faster downlinks.

Note that SaudiSat-1A, SaudiSat-1B and TIUNGSAT-1 at the time of writing are yet to be allocated "OSCAR" numbers

DX Notes

Ross Christie, VK3WAC
19 Browns Road, Montrose 3765, Vic.
Email Vk3wac@aol.com

In all the rush to get December's 'DX Notes' off to Colwyn I forgot to pass on my Seasons greetings to everyone. I trust that Santa filled your stocking with lots of useful gadgets and hopefully heads were not too fuzzy on the first morning of the 21st century. I hope you all have a safe, healthy and successful year in 2001.

The CQ WW 'DX' CW on the 25th and 26th of November was a great opportunity to work some good DX. I managed to work 12 new countries, 5 on 20m, 1 on 15m and 4 on 10m. The bands were really alive, 10m especially, and conditions seemed to be good. I experienced some local QRN on the Saturday afternoon from a faulty magneto on a neighbours petrol driven brush-cutter (I had a word with him on the Sunday over a beer and we fixed the problem together). I had no intentions of really attempting to enter the contest, but the wealth of stations calling was too much to resist, and the chance to add to my country score could not be passed up. Is the participation rate in, and therefore the relevance of, this contest going to decline in the years ahead due to the 'dumbing down' of the Morse test? Personally, I doubt it. CW seems to be alive and doing particularly well all over the world.

The experts say that the sun-spot cycle has reached its peak, this being the case we should expect some spectacular propagation on the upper HF bands this summer. The 10m band is one of my favourites and I am looking forward to working some good DX. For the last couple of years propagation into Europe in the evening, and the USA in the morning, has been routine. But I would like to work some African or South American stations on 10m or 12m. Planning and perseverance will be called for here. Over the next few months I hope to be able to spend more time on the air so perhaps I will achieve my wish. Hopefully I'll work some of you on the bands.

The DX

5R8FL, MADAGASCAR. Andre has been heard often using SSB on 20 metres. The best time to catch him is around 0300z. [TNX The Daily DX]

9G, GHANA. A group of Dutch (PA) operators are currently active from the Dormaa-Hospital in Dormaa-Ahenkro, Ghana. The following stations should be active on CW and SSB on 40m, 20m and 15 metres; 9G5 ... (QSL via PE1LUC), 9G5WP (QSL via PE1PFN) and 9G5GM (QSL via PA3GGM). Also, look for activity from the club stations 9G1AA and 9G1OO. QSL for both club stations is via PA3ERA. [TNX OPDX Bulletin]

9X, RWANDA. Charlie, N4CT (ex-T5CT, SV0CT, G5BAU, GC5BAU, TJ1AW, K4PHY/ YV5, DL5IX) will be in Kigali from the 12th of January until the 12th of March. He will be working at the US Embassy. He is hoping to find a local amateur who will allow him to operate as a guest while he is there, any info would be greatly appreciated. Charlie can be contacted via E-mail at n4ct@onebox.com

AP, PAKISTAN. Bob, AP2JZB, has been quite active on 12 and 10 metres. He has been complaining to some regarding the apparent lack of activity on the bands. Check 24955 and around 28527 kHz between 1330 and 1430z and if you hear Bob give him a call.

C56, Gambia. Between Christmas and January 5, 2001 Peter, G2YT, expects to be QRV from The Gambia as C56/G2YT. Look for him on 10 through 80 metres on SSB and possibly on PSK31. Ron, G3NKO, also expects to be QRV during this time frame on CW. He has applied for a C56 call. [TNX The Daily DX]

D6, COMOROS (Update to OPDX.486). Josep, EA3BT, sent out another short press release this past weekend requesting input from the DX community on what "bands and modes" he and his wife (Nuria/EA3WL) should be active on from Comoros. Their activity will be from January 13-28th. You can find information on their DXpedition and leave your input on what bands and modes they should operate on at http://www.qsl.net/ea3bt [TNX OPDX]

EA8, Canary Islands. Heijo, DJ1OJ, will be active as EA8/DJ1OJ for a few months. Heijo arrived on Canary Island in mid November and will be active until he leaves Tenerife sometime in March 2001. QSLs should be sent to his home callsign via the bureau. [TNX DJ1OJ and OPDX]

EP, Iran. The club station EP4PTT has been active recently on 28331 kHz and 28341 kHz around 1400 to 1430z. Information provided to "QRZ DX" states that the station is in Shiraz and operated by Hamid/EP3HR and Yar/ EP3SP. QSL route is via c/o Directorate of Telecommunications, Box 11365-931, Tehran, Iran.

EP2MKO. Ali is also very active from Iran and is often found on 30m, 12m and 10m between 1300z and 1500z. He is sometimes on 30m as late as 2330z. If you are lucky enough to manage to work him, QSL is via UA6HCW. [TNX EP3HR and OPDX]

P4, Aruba. Martin, VE3MR will be active as P40MR from Aruba (SA-036) from the 2nd of December through until April 2001. QSL via VE3MR. [TNX The Daily DX and 425 DX News]

SU1HM, Angola. Hossam is back in Angola and expects to be QRV as SU1HM/D2 on 20 metres SSB (no CW) until February 2001. [TNX The Daily DX]

VP5, Turks and Caicos Islands. Donald, KN4UG, will operate as VP5AZ from the 19th to the 30th of January 2001from Providenciales Island and he intends to take part in the 160 Metre CW Contest. All QSLs go to KN4UG. Donald Namm, 103 Birkhaven Drive, Cary, NC 27511. [TNX OPDX]

XT, Burkina Faso. Harold, XT2AW, has been very active on CW on the WARC bands as well as 10 metres recently. He has been heard on 7007, 10106, 14035, 18070, 24902 and 28028 kHz. Most of his activity takes place between 0030 and 0630z. QSL via DF2WO. [TNX OPDX]

YI, Iraq. Two stations have been quite active on 12m and 10m recently. YI9KU has heard on CW operating on 28026 kHz around 1530z (QSL via DL9KU) and Peter, YI9OM, has been heard on 24894 kHz SSB between 1330 and 1430z (QSL via OM6TX).

IOTA Activity

OC – NEW. An Australian team comprising Wally, VK6YS, Dan, VK8AN, Bruce, VK6CX, Nigel, VK6KHD and Jim, an unlicenced member of the team, are planning to operate from Breaksea Island. Operation is scheduled to take place between the 18th/19th until the 22nd/23rd of January 2001. The callsign to be used is VK6BSI. Breaksea Island is classified as a class 'A' reserve and requires the issue of a special permit from the Conservation and Land Management for visitors to the island to go ashore. This is the first time amateur operation has taken place from Breaksea Island and a new IOTA reference number will be issued when operation begins. The island is located at 35 deg 11.334 mins South 118 deg 3.703 mins East, just south of Albany, Western Australia. QSL will be via Alan Roocroft, VK4AAR, PO Box 421, Gatton 4343, Queensland, Australia.

FO0WEG & FO0POM —> SP9FIH and SQ9LR logged more than 15,000 QSOs in 11 days from Tubuai (OC-152, Austral Islands) and some 5,300 QSOs in 4 days from Nuku Hiva (Marquesas Islands, OC-027). They operated barefoot on all bands from 80m to 6m. Antennas used in the operations were with a tribander, a vertical and a 5 element beam for 50 MHz. QSLs are expected to be mailed out at the end of December 2000. QSL via SP9FIH (P.O. Box 480, 44-100 Gliwice, Poland).

ZV7G, Santo Aleixo Island (SA 046). QSL cards for this operation should be sent to either PT7AA or PY7MEU (bureau cards accepted). ZV7G was active from Santo Aleixo Island (SA-046) in September 1999. [TNX PT7WA and OPDX]

Special Events

R1, Antarctica. The "DX News Letter" has been informed that Gennady will be active from the Russian base "Progress" and will be on the air as R1ANP on 14160 kHz between 1500 and 1800z in the near future. [TNX OPDX Bulletin]

DXpeditions

Two Spanish operators, Josep, EA3BTand Nuria (YL), EA3WL, have announced they will be QRV from the Comoros Islands in January 2001. They will be active on 80 through 10 metres using CW, SSB and RTTY. The two plan to have two stations running simultaneously, one for 10, 15 and 20 metres and another on the WARC bands and 40 and 80 metres. Activity by D68BT and D68WL is expected from January 15 to 28. QSL is via EA3BT, Josep Gibert, Collegi, 1 08800 Vilanova I La Geltr£, SPAIN. For more information visit their web page at http://www.qsl.net/ea3bt/Comoros-Introduction.htm. [TNX The Daily DX]

Round up

Validity of the recent operation of BY/R1ANF has been called into question. Apparently Oleg, UA1PBA, was visiting the Chinese Antarctic base 'Great Wall' located in the South Shetlands (King George Island) and not China itself. Alan, BA1DU, has issued a press release stating "According to current radio regulation of China, it is impossible to issue such a BY/ callsign. The authorities never permit foreigners to operate amateur radio stations independently in China, and all holders of Chinese guest amateur radio operating license can only operate under a BY club callsign/guest's home call sign. Although there are no national boundaries in Antarctica, Chinese authorities never permit that callsign operation". If you managed to work this station the QSL address, for what it may be worth, is QSL via RK1PWA: Nick Shapkin, P.O.Box 73, 164744 Amderma, Arkhangelskaja, Russia. [TNX OPDX]

Although the UN forces stationed in Kosovo have been there on duty for over a year there are only two active stations on air at the moment. These are owned by Andy, 4O8/9X0A (RW3AH), and Bojcho, 4N8/LZ1BJ. Another amateur, Paul, G3SEM, has just recently arrived in Kosovo and is awaiting the appropriate licencing paperwork. There are quite a few other amateurs who are stationed in Kosovo but are not QRV, these include Bruno, 5X1A, David, GW0HHT, Bob, KA7FBV, Joe, N5XY, Alfredo, EA1FH/9U5CW and Jean-Pierre, 9U5DX. As yet, the two Club stations, 4N9P and YU8FFG, have not received licensing from UNMIK/KFOR. [TNX The Daily DX]

As the colonial empires of the past dissappear, so do the technologies that helped support them. On the 15th of December 2000, the Radio Agency of The Netherlands celebrated the 50th anniversary of former intercontinental radio reception station "NERA", Nederhorst-den-Berg Radio. The station had been used in conjunction with the Kootwijk transmitter (110km further east) to keep in touch with the Dutch colonies around the world. During the celebrations a special event amateur radio station was set up and operated on the weekend of the 9th and 10th of December The station was manned and operated by employees of the Radio Agency and the callsigns PC50N and PC50R had been applied for. This is interesting as the callblock 'PC' has never been issued to radio amateurs in the Netherlands before Activity took place around the clock on CW, SSB and PSK31 on all bands from 160m to 70cm, something for everyone A special QSL card was printed and will be issued for all contacts and correct SWL reports QSL cards are to be sent automatically for all QSOs via the bureau Further information on the event, and information on the role NERA played in Dutch communications, can be had from Ben Witvliet, PA5BW c/o NERA, Radioweg 3, Nederhorst-den-Berg, The Netherlands. E-mails can be sent to the following address, ben witvliet@rdr.nl

Another 'special' event station on the air last December was EN23RW. This station was to commemorate the final closing down of the Chernobyl Atomic Power Plant. In my opinion, considering the deaths and increased cancer risks inflicted on the Ukrainian population and the contamination of arable land over large areas of Western Europe, the plant should have closed down a long time ago. Be that as it may, a group of Ukrainian operators comprising UX1RY, UX2RV, UY2RA, UY2RO, UR0RR, US5RR, UT0RW and UZ8RR was active using the special call EN23RW QSL is direct to Andre Arsiyanz UX2RY, P.O. Box 14, Slavutich-3, 07100 Kiev oblast Ukraine.

Sources

All the information above has been gleaned from a number of sources on the Internet and from the following sources. VK6YS and his team, DJ1OJ, EP3HR, PT7WA, The Daily DX, OPDX Bulletin and 425 DX News We can show our appreciation by getting on the air and working some of these stations If you do then please let me know who and what you worked so I can use the info in DX Notes 73

Awards

John Kelleher VK3DP, Federal Awards Officer
4 Brook Crescent, Box Hill South Vic 3128, (03) 9889 8393

Another year has come and gone. It has been exciting, with the addition of new entities, and the country total rising to 334. One outstanding VK operator has produced proof of working all countries on the current DXCC list. That, of course, includes the elusive P5.

Congratulations to David, VK3EW (Electric Wireless to his friends).

On the home front, I have been plagued by applications for DXCC awards listed in alphabetical order of countries. This is in opposition to my earlier fervent requests to list your applications in alphanumeric order by callsign prefix, repeat PREFIX. To explain, as your applications are received, I transfer all data to Master Sheets, which are constructed in PREFIX order. Consider my situation when confronted with a sizable list in alphabetical list by COUNTRY. This latter procedure eats up valuable time, and slows down processing applications from other operators. I do know that logging programmes can be configured to list by prefix.

The fees for WIA Awards were increased to US$10.00 almost twelve months ago, but I am still receiving applications that contain the lesser amount of US$5.00. These fees were increased because postal charges for dispatch of awards far exceeded the former lesser amount. I feel embarrassed to ask for another US$5.00. To help with upgrades to DXCC, please include an SASE with your requests.

My congratulations to our YL operators for their successful expedition to Norfolk Island.

I am still looking for input from Clubs and organizations that sponsor local awards. This magazine is read by DX operators who are always interested in working a few VK local awards. In fact, I have had correspondence with requests for information on these awards.

Australia - The Zone 29 Award.

Work 25 stations in CQ Zone 29. This includes the VK6 and VK8 call areas. Contacts after Jan 1 1952. No cross-band contacts. Minimum RS/T is 33/8. GCR list and fee of 5 Irc or Aus$2.00 go to Jim Rumble VK6RU, Box F319, Perth WA 6001 Australia.

Belgium - Antwerp CW Series.

General requirements: Fee for each award is 10 Irc or US$5 – No stamps please. GCR list OK. All bands and modes. SWL OK. Apply to:

Jan Van der Auwera ON4NM
Dieseghemlei 87
2640 Mortsel Belgium

Benelux Award

Contact stations in the Benelux countries of Belgium, Netherlands and Luxembourg.

Europeans need 7 ON, 7 PA, 2 LX. Others need 5 ON, 5 PA and 2 LX. Contacts since 1964.

WOSA Award.

Contact stations in the City of Antwerp since 1954. ONs need 12, Europeans need 10,and the rest of the world need 8.

Brazil - CWAS Series.

General requirements: GCR list and fee of 7 Irc or equivalent go to:

CWAS Award Manager
PO Box 27
88001 Florianopolis SC
Brazil

Worldwide QRP Award.

Make CW contact using less than 10 watts to the antenna. 50 QSOs with at least 5 countries, including your own country. Contacts since May 1 1987.

Canada - Birthplace of Canada Award.

Contact 3 VE1's in Prince Edward Island after Jan 1 1967. VE1's or VO1-2 need 6 DX outside North America need 2. Charlottetown, PEI is where the Canadian founding fathers assembled to join the provinces and territories under one flag and united the country. All HF bands may be used. GCR list and US$3.00 or 6 Ircs go to:

Wiltshire DX Association
PO Box 2494
Charlottetown PEI
Canada C1A 8C2

England - Rabbit Award.

I am told that "Rabbit" is slang for talking for a long time, similar to the better known "Ragchew" or "Rattle". To earn this award, make one (hopefully more) QSO of at least 15 minutes duration with another amateur. Hello and goodbye contacts are too common today, and the sponsor wishes to encourage the opposite. Any band or mode will do the trick. GCR list and fee of US$5.00 or 10 Irc to:

Roger Betts G0TRB
15 Cleasby
Tamworth Staffs
England. B77 4JL

Estonia - Estonia Award.

Contact ES stations since Jun 1 1990. All modes and bands. SWL OK.

European Requirements:

1. HF 20 ES in 5 call areas. Endorsements 50 or 100 different.
2. VHF 10 ES in 5 Locator districts
3. UHF 5 ES on 70cm
4. SHF 3 ES on 23cm and above.
5. 6M 10 ES in 5 Locator districts.
6. Satellite 5 ES by amateur satellite.

DX Requirements:

1. HF 10 ES. Endorsements for 50 or 100.

4-4 as above. For 2 ES above 144 MHz.

5. 6M 5 ES
6. Satellite 3 ES.
7. SWLs, use EU rules above.

GCR list and US$5.00 for basic award. Additional sticker endorsements are US$2.00. Apply to:

EARUE
PO Box 125
EE- 0090 Tallinn
Estonia

Malaysia - All Malaysia Award.

Work 10 9M2, one 9M6 and one 9M8 after Aug 31 1957. Endorsements available for any combination of band or mode. SWL OK. GCR list and fee of US$5.00 go to

Marts Award manager
Eshee Razak 9M2FK
PO Box 13
10700 Penang
Malaysia.

I thank you sincerely for requesting some of the above. Keep your requests coming.

Best regards es 73 de John, VK3DP

Contests

Contest Calendar January – March 2001

Jan	1	ARRL Straight Key Night	(CW)	
Jan	6/7	ARRL RTTY Roundup (Digital)		
Jan	13/14	Summer UHF/VHF Contest		(Dec 00)
Jan	12-14	Japan International DX Contest Low-bands		
Jan	14	Ross Hull Memorial Contest last day		
Jan	20	LZ Open Contest	(CW)	
Jan	21	HA DX Contest	(CW)	
Jan	26-28	CQ WW 160 Metres Contest	(CW)	
Jan	27/28	REF (France) DX Contest	(CW)	(Dec 00)
Jan	27/28	UBA DX Contest	(SSB)	
Feb	_	Mexican RTTY Contest	(RTTY)	
Feb	10/11	WW RTTY WPX Contest	(RTTY)	
Feb	10/11	PACC Contest	(CW/SSB)	
Feb	10	Asia-Pacific Stprint	(CW)	
Feb	10/11	RSGB 160 Metres Contest	(CW)	
Feb	17/18	ARRL DX Contest	(CW)	
Feb	23-25	CQ WW 160 Metres Contest	(SSB)	
Feb	24/25	REF (France) DX Contest	(SSB)	(Dec 00)
Feb	24/25	UBA DX Contest	(CW)	
Feb	24/25	RSGB 7 KHz Contest	(CW)	
Feb	25	High Speed Club Contest (	CW)	
Mar	—	ARRL DX Contest	(SSB)	
Mar	10/11	RSGB Commonwealth Contest	(CW)	
Mar	10/11	World-Wide Locator Contest	(CW/SSB)	
Mar	17/18	John Moyle Field Day Contest	(All modes)	
Mar	17/18	Russian DX Contest	(CW/SSB)	
Mar	17/18	Bermuda WW Contest	(CW/SSB)	
Mar	17/18	DARC HF SSTV Contest		
Mar	24/25	CQ WW WPX Contest	(SSB)	

Results CQ WW DX CW Contest 1999

Australia only (Call\band\score)

VK2IA	All	2,312,019	
VK8AV	All	1,372,572	
VK4EMM	20	704,184	
VK5GN	80	21,960	
VK7WB	All	119,658	(Op W6FA)
VK4XW	All	5,616	
VK4ICU	10	170,746	
VK4TT	20	33,894	
VK2BNG	20	28,194	
VK3TZ	80	12,095	

Results ANARTS WW RTTY Contest 2000

From Colin VK2CTD, Contest Manager

(Australia only. Place\call\score\award)

3	AX2000	21,558,600	1st VK2
5	VK4UC	16,195,020	1st VK4
11	VK6GOM	8,929,998	1st VK6
71	VK2SG	1,257,360	2nd VK2
129	VK2BQS	348,950	3rd VK2

Repeater Link

Will [illegible] VK6UU
21 Waterloo Cr Lesmurdie 6076
VK6UU@VK6BBR
will2@iinet.net.au

420 MHz Gone!

It has been a real wake up call that secondary status on any amateur band is becoming very tenuous. With the news, as at time of writing, that the 420 to 430 MHz band looks like no longer being an amateur band. We are left with real problems on how to link voice and data systems. Many systems are linked on the 420 and or 440 MHz. In VK6 this frequency separation of 20 MHz made it easy to operate link systems using these two frequencies bands in close proximity. One of our systems operates into the same aerial, with just the addition of two cavity filters to diplex the transceivers together. Now what do we do? UHF transceivers are easy to obtain and modify. This has formed the backbone of linking voice and data systems together. Now, even with a major reshape of the 70-centimetre band plan, it is not going to be that easy anymore. Added to this LIPD's on some of our repeater inputs and suddenly the 70-centimetre band no longer looks so attractive for linking. However this could be but the beginning. The complete 70-centimetre band is secondary, meaning we could lose 440 to 450 MHz. Perhaps all that "protects" 430 to 440 MHz is the satellite allocation.

I have difficulty in knowing whether to be outraged as an amateur or accepting as a consumer of modern communications needs We use all manner of non-amateur spectrum from mobile phones to television, broadcast radio, Internet, computer radio links, and soon to be digital television. The list is a long one; there are just so many new uses for spectrum. We as amateurs sit on a lot, or at least we hoped we did, but we are secondary uses on all UHF and above frequencies, right up to 24 GHz where we have primary status. That means one day we may have very little UHF and above spectrum. We have all known why we had access to so much UHF and above frequencies, no one else wanted them! This is changing rapidly.

In my work situation spectrum limitations cause problems as well. All our 7 GHz microwave links had to shift frequency to 8 GHz due to frequency re-allocation. The 2 5 GHz electronic news gathering band is over crowded with only 8 frequencies to be shared between all television stations in Australia. This resulted in the ABC, for example, having two 2.5 GHz frequencies, one of which is of limited use as it is the closest of the eight frequencies to the microwave oven band, centered on 2,450 GHz. Microwave ovens drift a bit in frequency and cause considerable interference to 2,477 GHz. Consultation with the ACA has been unable to find any alternatives, as there is just no more room in the 2.5 GHz allocation

When it comes to running a business or starting a new one reliant on spectrum, pressure placed on the ACA or via Government could be considerable. A proposal to generate new facilities, jobs and money has a momentum that is difficult to stop. It would be interesting to know just what the percentages are of spectrum used by broadcasting, mobile phones, commercial communications, data, the list is very long, and amateur. Of the entire spectrum available just how much do we have access to? Not the large chunks above 24 GHz that few want at the moment but spectrum that can be put to use. Perhaps we need to really find out just how much we have access to, as it is easy to make assumptions.

Primary

It looks a bit gloomy for us amateurs as we have little tenure on secondary bands. If someone wants to use them for better mobile phones or what ever we probably won't even be consulted until after the event, as has happened with the 420 to 430 MHz band. There has been a call to gain primary status for some of our UHF and above bands. This started me thinking, what does primary mean. All I could come up with is interference protection. I asked the opinion of the VK6 WIA council just what does primary mean, and we all were at a loss. Even if we are able to move up to primary status on some UHF bands would that make much of a difference if big business wanted that band?

Where to?

What I find difficult is to know is how much investment in time, effort and money in installing repeater link systems is worth while, if they could loose their frequency assignments just like that. There is no certainty in life but it does make it harder spending considerable time installing repeater and link systems with the now real threat of much of the effort being wasted. We can engineer around many of these problems but what I have found frustrating is the limitations regulations place on amateurs. There may well be an engineering solution but the current regulations prevent such an idea. Changing these regulations takes a great deal of time.

The WIA have been working hard to maintain the 420 MHz band but the bottom line is, it is not our band It was only "ours" till someone else wanted it and was prepared to pay for it. In my opinion making a lot of protest about the loss is not productive. We can express our disappointment to the ACA via the WIA. If we did not know before, we know now, that many of our UHF bands are on appro until someone wants them

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Spotlight on SWLing

Robin L. Harwood VK7RH

The Digital Arrival of the 21st Century

Well another year has commenced and did you notice that some stations said that the 21st. Century has officially arrived now? What will happen during this year will be more experimental tests of the *Digital Radio Mondiale* format. Some broadcasters have been running tests on behalf of the DRM consortium in analogue and the digital platform. Usually they commence in the standard modulation mode with announcements in various European languages with snippets of various musical styles. After about five minutes they switch over to DRM and presumably the identical format to gauge the difference between analogue and digital modulation. Apparently the preliminary results are very impressive, particularly on shortwave. I believe there are samples on the web.

Digital Tests

I came across my first DRM test broadcast on the 5th of December on 17875 kHz at 2230z. It was probably from either Pori in Finland or Germany. I did not hear any station identification although both are currently conducting tests. Another group of tests is underway in the Russian Federation but these are not regularly scheduled. Apparently the Shepparton senders of RA may not be DRM compatible. DRM will also be employed on the domestic broadcasting allocations and will make a difference on the MW band The drawback is that no DRM receivers are yet commercially available although the standard has been universally accepted

There was a European standard known as Eureka 147 and test broadcasts were commenced on the FM bands there, but because few commercial receivers were manufactured, these were phased out once agreement was reached on the worldwide DRM format. Yet I stress that regular DRM broadcasting has not commenced although agreement has been reached at the Broadcasting and manufacturing level. I believe that 2003 may be a date depending very much on the ready availability of suitable receivers.

On November 8th, millions of listeners and viewers tuned in to see whom the next President of the United States would be. Usually the result comes out after the various state results are known and the media made a prediction that George Bush had won the pivotal state of Florida around 0530z, only to retract it an hour later. Not content with making one booboo, they again announced that George Bush had won the race and that challenger Al Gore had conceded around 0800z only to find out again there was a dispute over the voting totals, which had Vice President Gore retract his concession. As we now know the result was a cliffhanger and was finally resolved through the Courts a month after the election was held.

On the 8th, The VOA in Washington had an array of frequencies at their disposal but had not counted on such a dramatic anticlimax, necessitating some juggling of frequencies and transmitters. Interesting also was the reaction outside of the US to the Presidential election. Many nations have been roundly criticized over the VOA for their questionable election practices and they were pouring scorn on the Americans for getting themselves in a muddle over the logjam. Some commentators even suggested that they send their election "experts" who have conducted polls with 99.9% turnout with results of a similar amount for one candidate to show the people of Florida how to conduct an election!

The next President will be inaugurated on the 20th of January at 1600z and this will be broadcast live over the VOA.

The Slot Machine

I have recently come across a new undefined mode within the maritime allocations, which we have called the Slot Machine because it sounds similar to one. We cannot work out what it is doing but speculation is rife. The station is on two frequencies in the 8 MHz allocation and also on 6 MHz. Hugh Stegman in California and I have definitely narrowed it down to the Pacific or North Asia. I thought it was located in Hawaii yet Hugh favours Asia. We also though that the signals originated from an identical location but a Queensland listener is noting that they have different signal levels and are fading in at different times although close in frequency. This indicates that there are two separate locations.

The frequencies are as follows: 8703 and 8590 and 6449 and 6419 kHz, fading in here at 0900z. We have not been able to find them on any other channels.

The choice of maritime allocations does seem to point out it could be either navigational or a new communication mode.

I gave my Father an automatic door opener for Christmas and he is very pleased to have it, because he doesn't have to leave his car. However I was staggered to discover that it operates on 433.92 MHz! So far the door hasn't opened by itself from any 70 cm operator. Apparently the manufacturer previously was allocated 319 MHz but changed after a visit of an American aircraft carrier to Hobart. They had electronics running on that channel, rendering auto garage devices useless whilst the carrier was in port. The first channel allocated in the initial stages was on 27 MHz and because of the proliferation of CB, a higher allocation was hastily found.

Well that is all for this issue. Keep listening and 73 – Robin L. Harwood VK7RH

Pounding Brass

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What they did in the Olden Days

A technical look at early American hand keys and mainline relays and sounders.

Most American keys can be easily recognized due to their low operating profile, about 90% of these had metal extensions projecting from an oval shaped base. The metal extension at the front of the key i.e. -closest to the operator, passed through the base and was insulated from it by a hard rubber bushing, mounted on top of this was the 'Anvil' a cone shaped cap which carried a small platinum contact. Above the anvil was the 'Hammer' a small projecting contact also made of platinum which was fixed to the underside of the lever, the lever is supported at its trunnion by two set screws.

A circuit closure was provided on all keys, it was pivoted at one end of the base at the rear and could be held in position at the other ie the front by the use of a small flat strip of metal extending out a small distance from the cap. Telegraph circuits were operated as a series of closed circuit loops. Shorting switches or circuit closure were always kept closed except when actually sending messages, the line was always under test with this arrangement. The operating lever and circuit closure were fitted with hard rubber to protect the operator from operating voltages and currents that were always present.

The Lever contained two set screws, to the rear of the lever was a small metal extension which when set by the operator moved the platinum contacts closer or further apart as required, the other set screw at the front was fitted with a metal spring which set lever pressure.

Brass contacts were first used in early telegraph keys then later changed to platinum. The reason being - each time the telegraph circuit was opened a small spark occurred at the point of opening. This soon became oxidized and non-conducting, some operators filed the contacts which gave temporary relief, further filing reduced the contacts even more and in some cases the key had to be replaced at the expense of the operator. Platinum being much more durable and virtually non-oxidizable was to replace brass contacts.

The standard telegraph key were Bunnell, Steiner and Victor Key.

An important point to note here is that the above-mentioned keys were sometimes called "Leg Keys". Suitable holes were drilled into the operators desk to make room for the keys metal extensions, wing nuts held the key along with wire terminals fast to the under part of the operators table.

Mainline Sounders and Mainline Relays

Large centres commonly called 'Relay Offices', were the terminal points for dozens of smaller branch lines which covered a particular part of the country. A small office having a message for a station on its own wire could call that station directly and send its message. Otherwise, the message was sent to the relay office, which then retransmitted it on another line to the desired branch station.

Mainline relays were wound to 150 ohms - two types were encountered. In the first type the armature was part of the lever while in the second type the armature is a separate piece of soft iron, carried by a brass lever. The main object of relays were to 'relay' or repeat' the signals passing over the mainline to the sounders.

Other Sounders Used

Pocket Relays: Used for line testing, these were placed directly into the mainline.

Pony Relays: Were similar to Pocket Relays but smaller in size mostly used on private lines.

Box Relays: Same as the mainline relay except that a square or oblong wooden box covers the coils. This increases the sound of the signals and makes them clearly perceptible without the aid of a sounder. The operator could connect sounders if required.

Hope to have some great pictures on these in the next issue.

Hope to catch you on air soon.

73 Steve Smith VK2SPS

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AN EXPANDING VHF-UHF WORLD

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All times are in UTC

Tropo DX across the Tasman Sea

Here we are at the end of December and the first two-way contacts on 144 MHz, from VK5 to VK6 Albany, have yet to occur! The 144.567 MHz beacon has been heard a few times from Albany but no contacts as yet! Atleast the eastern seaboard has done a little better!!

Alan Johnson, VK2DXE reports ...."This evening 21/12 at around 07.35Z I worked Nick, ZL1IU at 5x2 both ways....the first ZL contact for the season. I subsequently phoned Gordon VK2ZAB, who phoned Guy VK2KU. They both worked Nick shortly after. Several other stations in the Sydney area, including Bob VK2TG and Gerry VK2APG at Kiama came up a short time later, although I'm not sure if they made contacts. Conditions down the coast from Sydney seem to be extremely good" ...Alan Johnson VK2DXE

The following is an extract from Neil VK2EI, Port Macquarie, logbook. 22/12/2000 0553 ZL1IU 5 1 4/5 1 Nick Okaihau. 0605 ZL1IU 5 2 5 2. 1820 I monitor the Auckland TV Ch9 video on 210.25MHz and 1st heard S1. Only audible for hour or so and not heard again! 1825-1943 ZL3MHB Greymouth Bcn peaking to S1. 1845 ZL2TAL 4/5 1 5 2 Ray New Plymouth. 2013 ZL2TAL 5 1 5 1. 2330-2359 ZL1VHF Auckland Bcn peaking to S2. 2349 ZL3NE 5 2/3 55 Bob Auckland

On 23/12/2000, 0000-0625 ZL1VHF Auckland Bcn peaking to S2 at times. 0136 ZL1IU 5 4/5 5 _. 0200 ZL1IU working VK4IC 0300 ZL2TAL went portable to an altitude of 1000m (we believe) and not heard again. In retrospect maybe he should have gone down to sea level, as I didn't hear the New Plymouth Bcn at 150m ASL? 0350 ZL3NE 5 1 5 3 0500 ZL3NE 53 44. 0502 ZL1IU 5 2/5 5 2/4. 0536 ZL1IU 55 55. During the above period both ZL1IU and ZL3NE heard numerous times. 925 ZL1IU working VK4IC. 1937 ZL1IU 5 1 4 1. 2020 ZL1VHF 3 1 masked by sun noise at sunrise

On 24/12/2000. 0901-0930! ZL1IU 5 1/4 5 1/4 never missed a word. 0930-1000 ZL1IU working VK4's copiable all the time. Nick also worked Chris VK4DFE for the first time. Chris's beam is fixed South and was able to work Nick off the side. Nick was good copy right up to the time he finally went to bed! Bill VK2ZCV contacted ZL1IU on 24th. His QTH is lower and further inland than mine running 100W to his portable 6 el yagi. His signals were approx. 3 S points weaker than mine ...Neil VK2EI

Doug VK4OE reports ... "Reading late last night about the news of the Trans-Tasman duct, I woke early and set up portable on Mt Coot-tha near Brisbane. I had gear for 144, 432, 1296, and 10368 MHz (with great hopes!) but only 144 MHz was used. At 17:35 UTC, on 24/12/2000 (05:30 local, uncommon for me!) I made immediate contact with Nick ZL1IU with good signals up to a meter reading of S-7 (that's really 'loud and clear'!) and there was a distinctive long slow QSB with five to seven minute cycles. No other ZL stations were audible at the time."

"The very interesting thing that Nick told me was that he had been hearing the VK4RTT beacon during the 'wee small hours of the morning' (does that fellow ever sleep?!) and that at the time of our QSO he could still hear it weakly. The VK4RTT beacon is about 150Km inland NW of Brisbane, admittedly on a pretty good hill. A contact to there would mean a significant path extension... over land as well!" .. Doug VK4OE

On 24/12/2000 Sporadic E was also reported. Chas VK3BRZ reports.. " We got a good sporadic-E opening from VK3 to VK4 this afternoon (Sunday) 24/12. My first contact was VK4OE at 0237UTC and the last one was VK4TZL at 0341UTC. Other stations worked were VK4KK, VK4AML, VK6ZWZ/4 (did not get his QTH), VK4IC and VK4DMI Several other VK3s indulged in the DX Among them were VK3XPD, VK3KEG, VK3DUQ and VK3UM " .. Chas VK3BRZ

Calling South Africa on 144 MHz?

Jim Linton, VK3PC, reports ... "Mike Bosch, ZS2FM has told the South African Radio League that Western Australian amateurs have suggested that radio amateurs in the Republic of South Africa listen for their VK6RBU beacon on 144.560 MHz located in Perth. This beacon radiates a 100 W ERP FSK horizontally polarised signal to South Africa. It has already been heard over a distance of 6 000 km. They feel that the best time for Tropo propagation over the Indian Ocean would be at night between about 20:00 and 01:00 UTC during the peak months of December, January and February."

"VK6 amateurs have requested that we also transmit beacon signals to Australia. Therefore, the Port Elizabeth Amateur Radio Society is redirecting the beam of their ZS2VHF beacon on 144.415 MHz to Perth as from now till February 2001 More Trans-Indian Ocean tests will be conducted from Port Elizabeth by transmitting high power CW signals on 144,250 MHz to Perth at night between 20:00 and 22:00 UTC during January and February 2001." ... VK3PC. While I know more than one person has expressed some doubt as to what was actually heard in ZS from VK6RBU, the above has been published to raise awareness

Spring Field Day 2000

Jim VK3AEF has sent in some photos (next page) of his portable station taken near Yanac, Victoria on the 4th & 5th of November 2000. The number of stations worked by VK3AEF/P, QF03, was 6m-11, 2m-61, 70cm-26 & 23cm-3.

Spring Field Day 2000

Bill VK3SWD, Jim VK3AEF, Rex SWL, Bruce Local farmer & Lionel VK3BUN

Rotation Gear. Box Foreground Voltage Reg & Direction relays

VK3AEF/P QF03 Site. CFA Tower at rear

Airport Beacons as 2M Sporadic Es indicators

The following from Ron Cook, VK3AFW, should be of interest to all those tracking Summer Es on 144 MHz ... "Traditionally we have E's on 2m some time in November and again around Boxing Day with other openings occurring into February. Arie, VK3AMZ, used to monitor aircraft frequencies to detect MUF rising above 100 MHz and was calling on 2m as the band opened. The Flight Information Service (FIS) transmissions at major airports provide a continuous AM transmission in the 110 to 135 MHz range. They run maybe 100 watts to a vertical antenna and so make a great E's beacon Because of the polarisation they are less useful for Tropo and aircraft enhancement tests. Apart from the continuous transmissions, they identify frequently thus allowing a positive ID."

Here is a list of frequencies at listed locations that are worth monitoring. The listing gives the airport and the FIS frequencies in MHz.

Adelaide	116.4 134.5
Albury	115.6
Alice Springs	115.9
Brisbane	113.2 125 5
Canberra	116.7 128.0
Darwin	112.4
Launceston	112.6
Melbourne	114.1 132.7
Perth	113.7 123.8
Sydney	115.4 127.6
Tamworth	116.0 123.8
Townsville	114.1 122.0
Wynyard	115.8

These frequencies are believed to be correct, however, any corrections or additions will be appreciated. There are many other frequencies in use at other airports, however, they are not run 24 hours a day." ... Ron VK3AFW

KH6 on 50 MHz again after 53 years!

Clarry Castle, VK5KL, Enfield, SA has written to say ... "Thought you might like to know that after 53 years I have again worked KH6 on 50 MHz. Wednesday 6th of December 2000, at 350Z the KH6 Beacon was audible. Tuning to 50.110 MHz there was KH6SX calling CQ and I made QSO at 0352Z 589/559. The band was not open to anywhere else this week other than VK8RAS being in 9/12/2000" ... Clarry VK5KL. The last time Clarry worked KH6 was during August 1947, as VK5KL in Darwin, to W7ACS/KH6 via the yet to be discovered "TEP" mode. The distance, 8533km, was for some time the world record on 50 MHz!

Steve VK5AIM, Elizabeth, SA reports JA's on 50 MHz on 12/12/2000. 12/12 0354Z JA8CAR 53, 0415Z JA8NAE 58-9, 0443Z JH1UUT 59, 0500Z JE7YNQ 59. Steve has reported various other 50 MHz openings via Sporadic Es to other states but little overseas DX

MICROWAVE PRIMER PART EIGHT: Getting RF to the Antenna

A lot of what follows, while applied to 10 GHz, is relevant to all allocations from 1.2 – 24 GHz. What was going to be just a few paragraphs has turned into a full Part on its own!

Two basic methods exist, transmission lines, e.g. Coaxial cables and propagating guides, e.g. Waveguide. Both are relevant

at 10 GHz. Below 10 GHz coaxial lines become more usable Above 10 GHz waveguide is almost mandatory except for the short lengths Two limiting factors come in force when considering coaxial lines at 10 GHz and above. The first one is the loss factor. Coax loss increases with frequency, at approximately the square root of the ratio of change in frequency. Good quality double shielded RG214 coax typically has a loss of around 1.2 db per metre at 10 GHz! I won't mention cheap RG58 losses as it varies when you bend it!

To decrease losses you would normally employ larger diameter coax but this is where the second limitation kicks in, coax does have an upper cut-of frequency. Put simply the diameter of coax can become large enough in terms of wavelength such that the coax can transmit energy in the same manner as waveguide. The coax no longer will efficiently propagate RF energy via the centre conductor. As a consequence it doesn't look like 50 ohms and will start to get funny resonances and losses. RG214 is only usable to 13 GHz. Popular Andrews Heliax™ LDF4/50 to 8.8 GHz ... although it can be used, after a fashion, on 10 GHz. Smaller hard-line like the common 3.5mm dia UT141 is rated to 26 GHz. Its loss at 10 GHz is around 1.5 db per metre. The best coax found so far, by the author, for use at 10 GHz is Belden 9913 or Times Microwave LMR400. Both are "RG213" sized cables and exhibit approximately 0.7db loss per metre. In summary coax is only used over short distances and when there is no alternative!

Waveguide is a more satisfactory alternative for transmitting Microwave RF over short to medium distances. Waveguide is dimensioned to enable TE11 mode wave propagation in the direction of the progressive wave front. Waveguide can be either round our rectangular, see further for the limitations on "Round" waveguide. Waveguide of a particular dimension will usually work over a near octave range in frequency, for 10 GHz you can use WR112 (WG15), WR90 (WG16), WR75 (WG17) and even WR62 (WG18) waveguide at a pinch! WR90 is the most commonly used for 10 GHz. The WR number is a US classification for waveguide, the number represents the largest dimension in 1/100ths of an inch i.e WR90 is 90/100 or 0.9" across. The smaller side dimension is nominally 45% of the larger side dimension i.e. for WR90 that is 0.4" The WG number is the equivalent UK classification.

Waveguide is typically made from copper, brass or aluminum section. Its chief limitation is its need for mechanical plumbing and moisture exclusion. Flexible "Oval shaped" waveguide is also commercially available for complete feeders as well as short flexible couplings. It is not cheap and the availability of anything but short (600mm) lengths of the right size is almost non existent.

Round and Rectangular waveguide is used as the basis of many 10 GHz Antennae or feeds. E.g., the round "Coffee" can feeds used on lower microwaves are simply made from round section that is "waveguide" at the wanted frequency. Horn type feeds alternatively use rectangular waveguide with a four sided "Pyramid" horn

A _ wave element placed in a waveguide with some basic matching will convert a coax line to waveguide and vice a versa. The actual dimension of the _ is about 4/5ths of that in free space as the velocity of propagation in waveguide is about 80%. Circular waveguide is an alternative to rectangular waveguide. Infact plain 20mm copper water pipe is a good size for use 10 GHz.

The chief disadvantage, previously hinted at, of circular vs rectangular waveguide is the ambiguity of polarisation. A rectangular section will preserve polarisation by nature of the TE11 cutoff of the smaller dimension A circular waveguide has no point of polarisation fixing and polarisation angle can change whenever a bend or turn is introduced. While this may be of no concern for a circular polarised system it is for plain polarisation! Various methods can be employed to stabilise polarisation, e.g. by squashing the pipe to an oval shape at both ends and introducing some matching. This squash has to be in keeping with the expected polarity orientation. Inevitably the actual loss of the feedline will suffer if this isn't done correctly. Don't be discouraged for using copper pipe; just be aware of its correct application

Having discussed both methods of Transmission media, it should be apparent that no simple answer exists to connect a shack-based transverter to an antenna mounted on a rotatable section of a tower. There are a number of answers, all which end up involving some amount of RF equipment being mounted at the antenna I have settled on good quality Coax (RG214) with a PA & pre-amp mounted up the mast with +20 db excess gain in both directions to overcome cable losses. If you want to run that big 50W TWTA then you have little choice but to employ waveguide of some description.

For portable operation it is a lot simpler, typically an antenna transmission media is 1metre or less in length According to the design of the feed, which inevitably is a waveguide-based design, the media may be partly or almost entirely made of waveguide fed with a small _ launcher and minimal UT141 coax.

Next month, Finally 10 GHz Antennae will be covered'! Other areas to be covered, in future Issues include Part 10 24 GHz and a Part 11 covering 2.4 GHz & 5.7 GHz wireless LAN cards Part 12 will conclude the series with Microwave ATV

IN CLOSING

VHF Communications Magazine Subscriptions, for 2001 are now due VHF Communications is largely based on the German language publication UKW Berichte, with most articles being translated from the same magazine Subjects cover VHF to Microwave applications. The content of the magazine is over 90% articles with little other additives! Four issues a year are published. The magazine has now completed a full year under Andy Barter G8ATD, the new publisher. In my opinion, Andy has lifted the quality and content of the magazine progressively over the year.

For the Y2001 the WIA SA division will be again handling distribution for VHF Communications This year we will be offering Airmail only subscriptions at A$55-00 This is a reduced price over Y2000 negotiated with the publisher to help boost VK circulation in spite of the current exchange rate woes. Closing date for subscriptions is 15/02/2001, all cheques should be made payable to the WIA SA & NT Division Inc, GPO Box 1234, Adelaide, SA, 5001 For further information, please email me at tecknolt@arcom.com au

Thats it for the first column of the 21st century, I'll leave you with this thought ... "Blessed is the person who is too busy to worry during the daytime and too sleepy to worry at night"

Till next month

73's David VK5KK

Amateur Radio Index 2000

Amateur Radio Index 2000

Amateur Radio Index 2000

Amateur Radio Index 2000

HF Predictions

by Evan Jarman VK3ANI
34 Alandale Court Blackburn Vic 3130

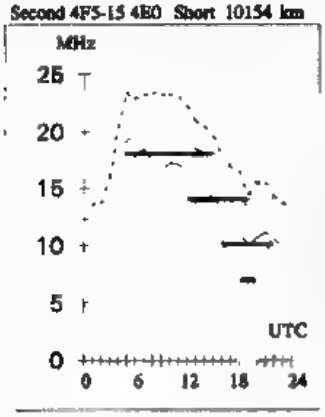
These graphs show the predicted diurnal variation of key frequencies for the nominated circuits.
These frequencies as identified in the legend are:-

- Upper Decile (F-layer)
- F-layer Maximum Usable Frequency
- E-layer Maximum Usable Frequency
- Optimum Working Frequency (F-layer)
- Absorption Limiting Frequency (D region)

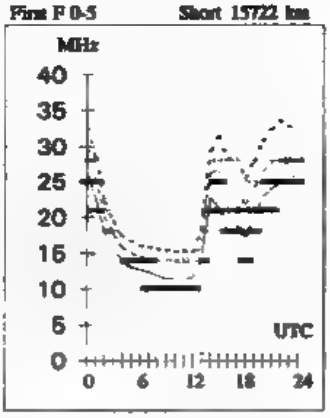
Shown hourly are the highest frequency amateur bands in ranges between these key frequencies, when usable. The path, propagation mode and Australian terminal bearing are also given for each circuit

These predictions were made with the Ionospheric Prediction Service program: ASAPS Version 4

Adelaide-Capetown 226 Second 4F5-15 4E0 Short 10154 km



Brisbane-Boston 56 First F 0-5 Short 15722 km



January 2001
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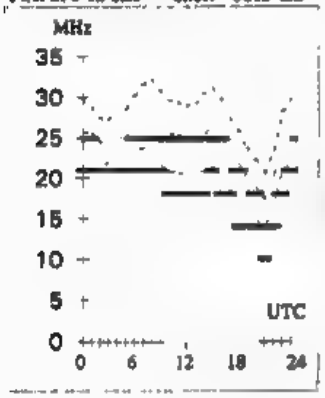
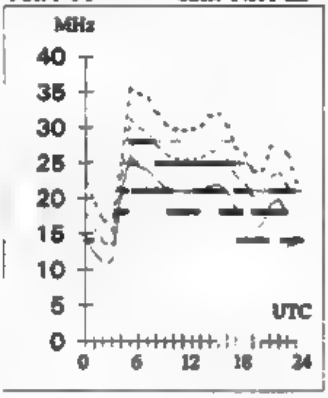
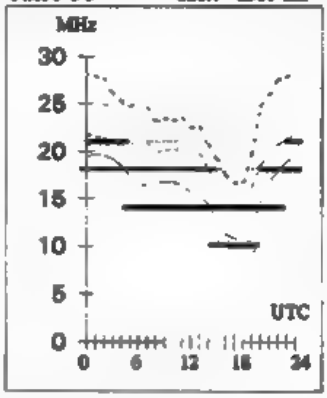
Adelaide-Manila 338 First 2F3-12 2E0 Short 5813 km



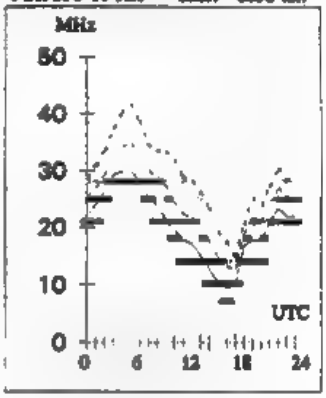
Brisbane-Cairo 288 First F 0-5 Short 14391 km



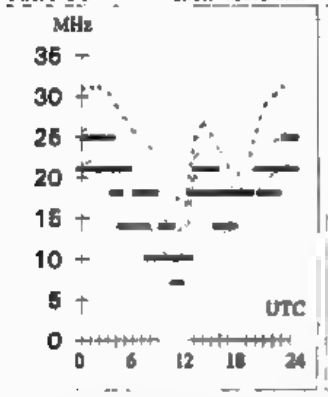
Canberra-Auckland 102 First F 0-5 Short 2300 km



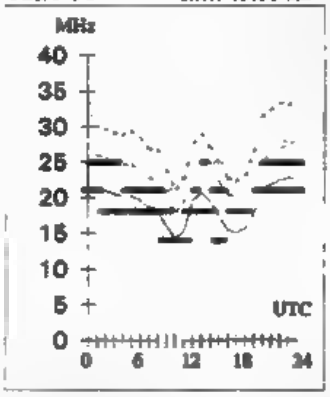
Darwin-Honolulu 65 First 3F3-11 3E0 Short 8636 km



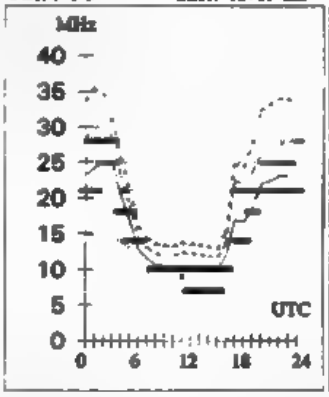
Adelaide-Miami 95 First F 0-5 Short 16175 km



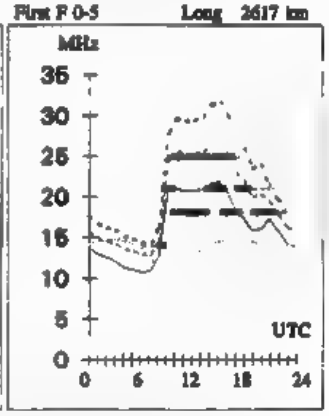
Brisbane-Lima 122 First F 0-5 Short 13056 km



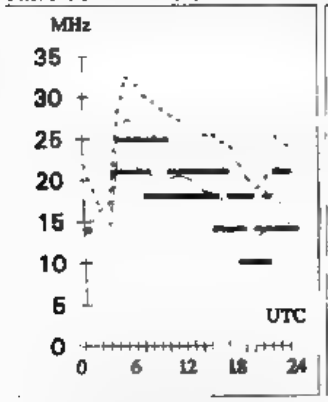
Canberra-Seattle 48 First F 0-5 Short 12709 km



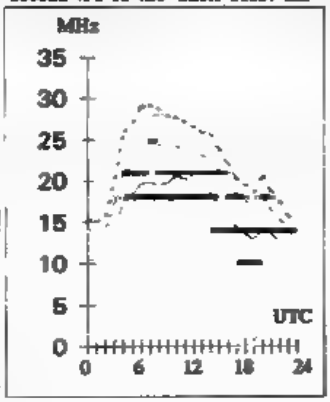
Darwin-London 145 First F 0-5 Long 2617 km



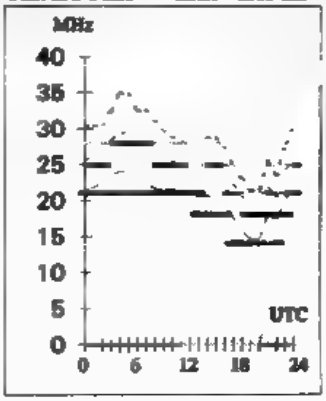
Adelaide-Tel Aviv 291 First F 0-5 Short 13126 km



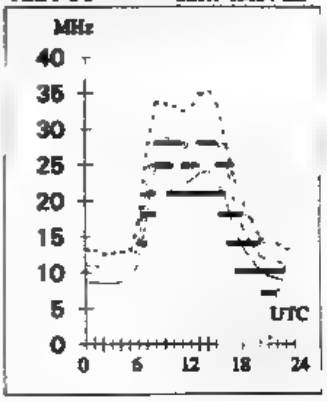
Brisbane-Pretoria 230 Second 4F3-10 4E0 Short 11657 km



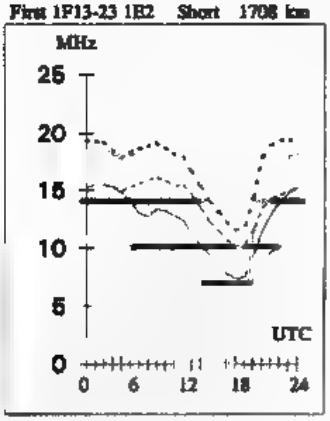
Canberra-Singapore 301 First 2F2-8 2E0 Short 6211 km



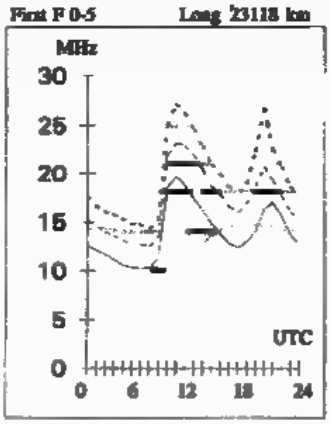
Darwin-London 325 First F 0-5 Short 13854 km



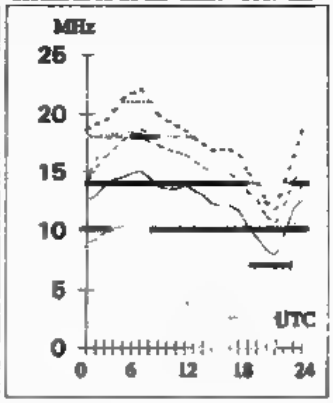
Hobart-Invercargil 111
First 1F13-23 1E2 Short 1708 km



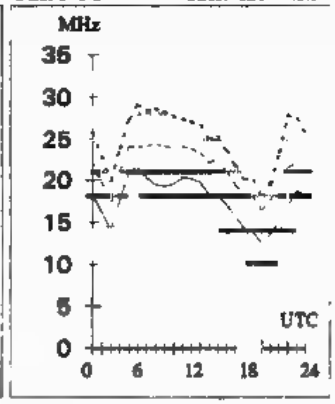
Melbourne-London 131
First F 0-5 Long 23118 km



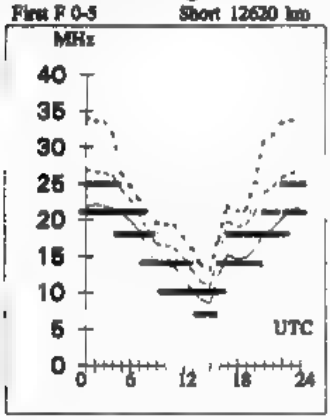
Perth-Jakarta 340
Second 2F15-26 2E Short 3017 km



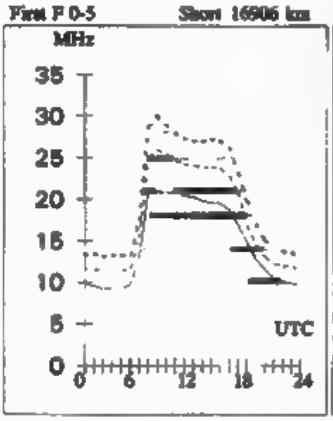
Sydney-Nairobi 255
First F 0-5 Short 12147 km



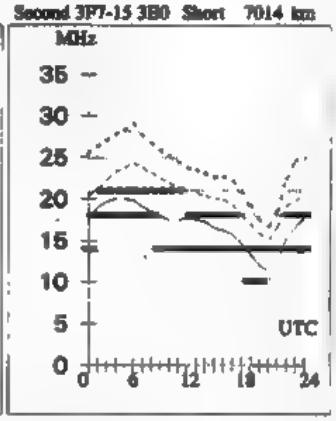
Hobart-Los Angeles 66
First F 0-5 Short 12620 km



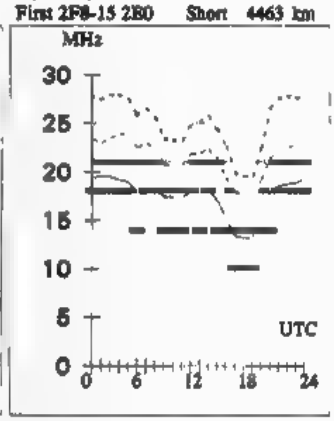
Melbourne-London 311
First F 0-5 Short 16906 km



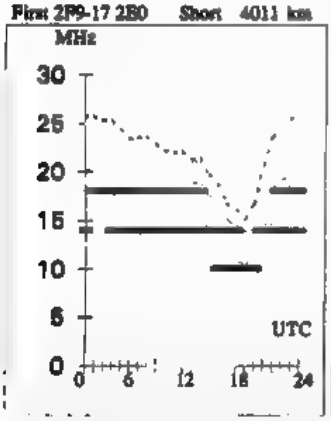
Perth-Kiribati 72
Second 3F7-15 3E0 Short 7014 km



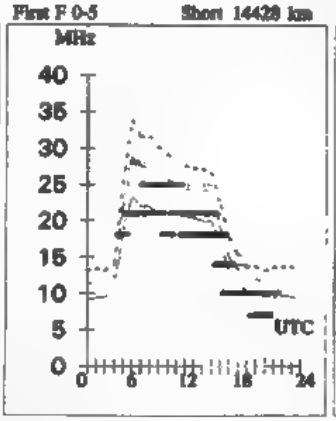
Sydney-Samoa 71
First 2F8-15 2E0 Short 4463 km



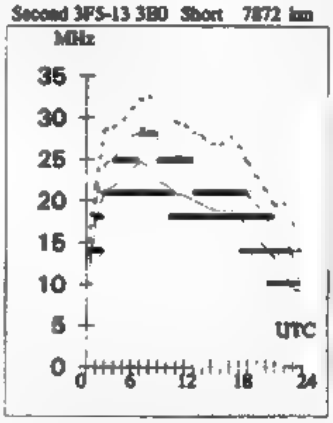
Hobart-Suva 56
First 2F9-17 2E0 Short 4011 km



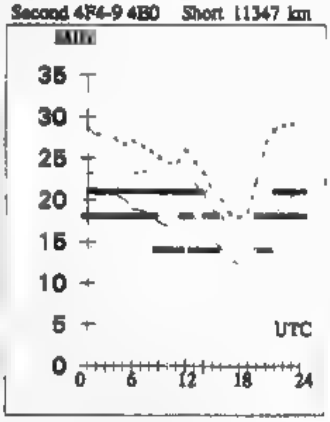
Melbourne-Moscow 316
First F 0-5 Short 14428 km



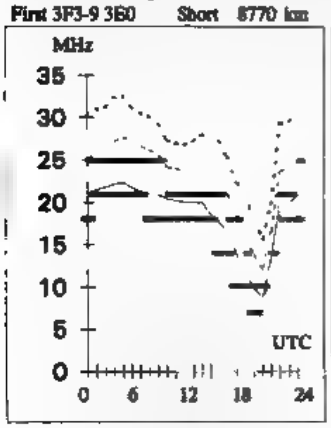
Perth-New Delhi 325
Second 3F5-13 3E0 Short 7872 km



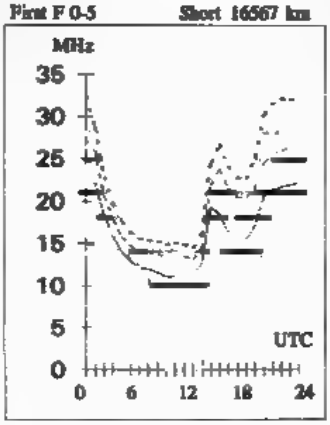
Sydney-Santiago 145
Second 4F4-9 4E0 Short 11347 km



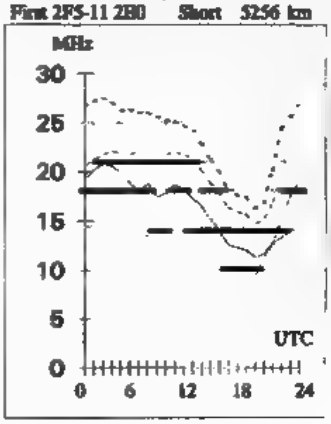
Hobart-Tokyo 354
First 3F3-9 3E0 Short 8770 km



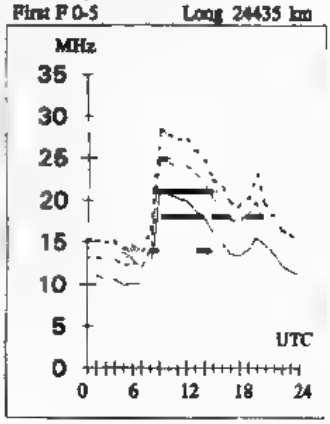
Melbourne-Ottawa 63
First F 0-5 Short 16567 km



Perth-Wellington 119
First 2F5-11 2E0 Short 5256 km



Sydney-Warsaw 133
First F 0-5 Long 24435 km



HAMADS

- Hamads may be submitted on the form on the reverse of your current Amateur Radio address flysheet. Please print carefully, especially where case or numerals are critical.
- Please submit separate forms for For Sale and Wanted items, and be sure to include your name, address and telephone number (including STD code) if you do not use the flysheet.
- Eight lines (forty words) per issue free to all WIA members, ninth and tenth lines for name and address. Commercial rates apply for non-members.
- Deceased estates Hamads will be published in full, even if the ad is not fully radio equipment.
- WIA policy recommends that the serial number of all equipment for sale should be included.
- QTHR means the address is correct in the current WIA Call Book.
- Ordinary Hamads from members who are deemed to be in general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being re-sold for merchandising purposes.
- Commercial advertising (Trade Hamads) are pre-payable at $25.00 for four lines (twenty words), plus $2.25 per line (or part thereof), with a minimum charge of $25.00. Cheques are to be made out to WIA Hamads.
- Copy should be typed or in block letters, and be received by the deadlines shown on page 1 of each issue of Amateur Radio, at:

Postal: *Newsletters Unlimited, PO Box 431, Monbulk Vic 3793*
E-mail: newsl@webtime.com.au (Fax: t.b.a.)

Please send your Hamad by ONE method only

FOR SALE NSW

• 50 watt dummy loads made by Ericsson "N" connector $10 weigh 1kg. Packed postage VK $6-$9 Can deliver Wyong Field Day Goulburn Amateur Radio Society. Ring David, VK2BDT, 02 4921 5036

WANTED - NSW

• Wanted a screwdriver type mobile antenna and mobile linear must be more than 300 watt and all bands. Tommy, VK2IR, Phone 0413 00 55 11 or email tommy@ircommunications.net

• Mobile Linear 350 watt or more wanted. Tommy, VK2IR, 0413005511 OR 95024111, Email tommy@ircommunications.net

• PLL unit for Kenwood TS-180S part number X60 1120 00 also transistors type 2SC 460B. David, VK2IX, 02 4751 6124

• 80m + 2m sniffers, 3mz + 4brg Type units for convention events. Contact B J Slarke Ph 02 6655 1116, email bjslarke@midcoast.com.au VK2ZCQ

FOR SALE - VIC

• Pro 39 programmable scanner 68-960 MHz, with case $175. Mick, VK3MSA, Ph. 03 9808 9039 email mickd@alphalink.com.au

• UHF block M67728 class A B 70 watt new unused $165 Stan, VK3SE, Ph 03 5332 2340

• Tower wind up (25' to 45') tilt-over, complete with winches H/duty rotator fixed to tower Tet 3 element mini beam All good condition. Moved house, must sell, make me an offer. Bob, VK3CF, 03 9361 3242

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• IAMBIC paddle. Meanwhile am up proverbial creek without a paddle. Graham, VK3IY, 03 5967 1210

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• Operators handbook or photocopy for Nokia 1600 mobile phone. "Someone must have one" VK5MAP, Paul, 08 651 2398 or QTHR

• Heathkit QRP transceivers type HW-7 and HW-9, Malcolm Haskard, VK5BA, QTHR Phone 08 8280 7192, email malcolm.haskard@unisa.edu.au

MISCELLANEOUS

• If you got your licence before 1975, you are invited to join the Radio Amateurs Old Timers Club. A $2.50 joining fee plus $8.00 for one year or $15.00 for two years gets you two interesting Journals a year plus good fellowship. Arthur Evans VK3VQ or Alan Dobie VK3AMD can supply application forms. Both are QTHR in any Call Book

• The WIA QSL Collection (now Federal) requires QSLs. All types welcome, especially rare DX pictorial cards, special issue. Please contact the Hon Curator, Ken Matchett VK3TL, 4 Sunrise Hill Road, Montrose Vic 3765, tel (03) 9728 5350

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Note 1 Views expressed in letters are those of the authors and do not necessarily represent the policy of the WIA.
2. Some of the letters may be shortened to allow more letters to be published.

Contests

I would like to respond to the remarks by VK6TQ about congestion in the bands during contests.

In last years CQWW contest the leading station made over ten thousand QSOs, over 4000 of these were on ten meters. Is Kim seriously suggesting that these thousands of amateurs should give up their fun so he can operate on a clear frequency whenever he wants. Lets get rid of some of the inaccuracy in his letter. Contests do not close down the bands on every weekend as implied by his use of the word "constantly". Yes, there are contests on nearly every weekend but only a few attract so much activity that they take over the bands. For SSB the big contests are CQWW (Oct), CQWPX(March), ARRL(March-only for band openings to USA) For CW they are CQWW(Nov), CQWPX(May), ARRL(Feb-only for USA) All mode IARU(July) and 28MHz specific ARRL10(Dec - both modes) For the ten meter phone operator there are 5 weekends in each year and for the CW operator there are 5 weekends each year where it could legitimately be claimed that it was difficult to find a clear frequency. Other contests vary in their impact but most are regional like our own VK/ZL so that they do not populate whole band segments. Anyone having trouble operating on the bands during these should look to their own operating skills rather than asking everyone else to make way for them.

I wonder who anointed Kim's operations as the only "legitimate" use of the bands! There is only one form of operation that takes precedence and demands a clear frequency from everyone and that is emergency traffic. Everyone else is equal. The ragchew is no more important or legitimate than the contest QSO. The DX net holds no precedence over the technical test of a new mode.

We are all licensed equally to transmit and receive on the amateur bands. If I choose to operate on a few weekends a year and make contest QSOs why should my operation make way for the operations of VK6TQ? Why is he more important than I? Does he pay more in license fees? Has he been granted special privileges for a QRM free operation? Of course not.

Contests do not have to justify their use of the bands beyond the fact that thousands of hams choose to do it, and the numbers are growing each year. If there were a need to justify band usage I have no doubt that contesting would easily outscore ragchewing as a good use of the bands. Populating the bands, technical excellence, propagation studies, computer interfacing and control systems, antenna developments are all part and parcel of contests.

Contest free zones already exist as all of the WARC bands are kept contest free. The ARRL 10 meter tried the concept on 28MHz but it failed because firstly it was just an empty band, nobody used it; and secondly it meant that LU novices were unable to take part in the contest. Whatever band segment chosen would always result in someone loosing out.

I suggest that Kim looks at the contest calendar and keeps off for the five weekends a year that he will be frustrated. Of course, he could join in. He might just find that it is fun and in one weekend he has worked more DX and finds out more about ten meter propagation than in any one year to date.

73

Martin Luther VK5GN
Email luther@mail.mdt.net.au

The comment in the "Contests" column that the RST should be dropped has provoked me to write this. *What is a Contest?* It is a test of skill and the end results are judged on ability to read/hear the call and report sent to you correctly.

A letter or figure wrong in your log can cause havoc to your final score. In worldwide contests such as the IARU, you have to read the call, RST and zone correctly. In our own VK/ZL we have to log the call, RST and serial number correctly. That is part of the skill. The other parts of the skill include the ability to hear and read very weak stations, or select one of say five stations calling you, correctly. You need to know which band you should be on at a given time and to know what direction your antenna should be pointing, short path or long path. Personally I would like to see contest reports expanded to include more ciphers such as perhaps the operators age, number of years licensed, etc.

The Europian Contest requires a length of ciphers referencing previous QSOs. A simple misreading of these causes points to be lost. For those that use computer logging, such as myself, when a station sends 579 instead of 599, it means attention on the keyboard. If I just recorded 599 and not 579, I am deemed to lose points with a good contest examiner that has complete cross log checking facilities. So, keep the RST, but send a honest report and get those hot shots, big scoring contesters, to think and not just sit back and record calls and serial numbers.

Now to those who complain about contests cluttering up the bands.

Firstly, there is not a contest every weekend that affects us in Australia. In fact probably only 6 weekends of the year effect both CW and the Phone Sections. There is plenty of spectrum for everyone. No one amateur owns a frequency, or band. Perhaps we should remind the whingers that Amateur Radio is a fraternity, where understanding and tolerance is a major part of the mandate. If contests upset you for say 25 days of the year, surely those who are not participating would be prepared to offer this time to those interested in contests. It leaves 340 days for the non-contester

to have the bands all to themselves. If you cannot tolerate this, I would respectfully suggest you try CB or the internet chat lines.

Next time you hear a worldwide contest, test your own skills. See how many countries you can contact in say two hours, or even try for a DXCC. If it's the ARRL contest, see how long it takes you to log every U.S. State. (In fact Contest organisers could encourage more activity if they offered awards for these achievements).

Whatever you feel about contests, *be tolerant*. It costs nothing and shows that you are a worthy and understanding member of our great fraternity.

David A. Pilley VK2AYD
(50 years plus as a Radio Amateur).

USE IT or LOSE IT

"Use it or lose it" is a phrase that gets bandied around from time to time. Treated as a cliche, the reaction usually is something like 'yes, probably true. Someone had better get on and use it'.

The recent writings on CW have been of great interest to me as a CW operator; but the fact is there is NOTHING to be gained by wanting things from the past kept automatically - EVER.

The Amateur is supposed to be progressive, but are we progressive now as we used to be? Can we be innovative in current technological developments, or has industry now done all the research and left us nowhere to go?

If the latter is now a fact of life, can we wonder that Radio Conferences would think of removing our bands? What can Amateurs do to extend knowledge and earn the right to stay on the bands?

In the meantime, use what we have or lose it!

Ian VK3VP

Why Is Morse necessary for HF Licensing?

It seems to me that the pro Morse test lobby are missing the point. Surely the question is whether it is still necessary for Amateurs to have to prove a proficiency in Morse code before being licenced for the HF bands.

What is the purpose in having a Morse test as a requirement for HF licensing?

Most of the arguments for the retention of the Morse test do not address this question. We are all familiar with the arguments, so I won't repeat them here, but they are arguments in favour of using CW in preference to other modes. These arguments are, for the most part, quite valid in promoting the benefits of using CW, but this does not translate into a logical reason for forcing Amateurs who wish to use HF, but have no interest in CW, to learn Morse code.

Morse code was a necessary skill when Amateurs shared the HF bands with commercial CW stations. Amateurs were required to be able to understand CW from commercial stations so that they could change frequency or shut down if they were likely to cause interference to the commercial station. This skill is no longer an essential requirement.

The Amateur Radio exams should be designed to allow as many interested persons as possible to obtain a licence but at the same time be sufficiently demanding to ensure that candidates have a good understanding of the regulations and of basic radio theory. These exams should be designed to minimise poor operating practices which may result in interference to other Amateurs or, more importantly from the licencing authorities point of view, to commercial users. I suggest that the present theory and regulations exams achieve this aim. Being able to use Morse code is not relevant when assessing a candidates ability to use a transceiver in a responsible manner on the HF band, or any other band for that matter.

At present a limited licence allows an Amateur to use any band above 30MHz but not below. Why? It does not make sense. Are limited licence holders who work DX on 6 metres incapable of working DX on 20 metres? Is there something mysteriously complex about an HF radio that only a Morse code trained operator can handle? Obviously not.

There are suggestions that the Morse test be replaced by some other test, proficiency in Packet Radio for example. Surely this would be another unnecessary and arbitrary hurdle for those prospective Amateurs who may have no interest in Packet Radio or computers.

I have no doubt that CW is a very rewarding mode for those that use it regularly and that it will continue to be used by the CW fans whether the Morse code test is dropped or not, but it is time that we made it possible for newcomers to sit an exam which is based solely on their technical ability to operate a station. This really is the only purpose of an exam, to ensure that Amateurs have a basic knowledge sufficient to prevent interference to other spectrum users. Any additional testing is irrelevant and undesirable as it can only damage Amateur Radio in the long term.

Despite comments to the contrary by some pro Morse hams, Amateur Radio is in decline around the world. It is vital that our bands are used by as many Amateurs as possible and that we encourage newcomers into the hobby. The alternative is all too clear.

Geoff Skinner VK4XUK

Diesel Engine Interference

I wonder if any other amateurs who go HF mobile buy diesel-engine vehicles because they are quiet electrically. As well as an interest in HF mobile, I also investigate interference for various groups, which necessitates using HF and VHF radio receiving equipment while mobile. I cannot use noise blankers as this would blank the interference out.

I bought a diesel engine vehicle and much to my horror discovered that it had ignition interference. How can a diesel engine have ignition interference? It can't but with the latest electronic fuel injection on some diesel engines the electrical pulse applied to the injector has such a steep fronted wave form that it does in fact cause interference, right from broadcast band through to VHF. So bad in my case that a filter was fitted under warranty to reduce the interference on the broadcast band. This was largely successful on the broadcast band but S9 interference on HF still.

The manufacturers are not interested in dealing with this problem, so I'm largely on my own. It will be overcome but it will be quite a bit of work. Anyone got any ideas?

I'm just writing this to alert other prospective owners of diesel engined vehicles to check if any interference is generated by the vehicle.

73

Rodney Champness VK3UG.

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